The K-State emoji scale: development and validation

By

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Abstract

Emoji have grown in popularity as a method for digital communication. In recent years, there has been increased interest in the connection between emoji and emotional response to consumer products. Research has been conducted linking emoji and the emotional response from food stimuli in adults via avenues such as Twitter, and in children. The objective of the research discussed in this thesis was to create, validate, and determine suitability of an emoji-based scale for measuring consumers' emotional response to products.

First, an online study was conducted to assess the application of an emoji-based pictorial facial scale with children ages 8–11 (grades 3rd, 4th, and 5th). Two hundred and fourteen participants were asked to evaluate their liking and emotional response using the Peryam and Kroll (P&K) scale (super good/super bad) and pictorial emoji scale, respectively, for both food and non-food experiences. Scores from each grade level were not statistically different. The responses from both scales had similar mean scores and distribution patterns for all experiences with no incidence of bias toward any one emoji. These findings support the suitability of the emoji scale for measuring emotional response using written stimuli names with children ages 8–11 in the United States and indicate it is a reasonable alternative to the P&K scale for this demographic.

Following the online study, a two-phase project was carried in the US and China with children ages 8-11. In Phase 1, participants were asked to evaluate written food and situational stimuli using one of two emoji scale prototypes and the Peryam & Kroll (P&K) scale (super good/super bad). One prototype, the K-State emoji scale, performed significantly better than the other based on its stimuli discrimination and participant understanding and was chosen for further research. In Phase 2, the same demographic was asked to taste and evaluate flavored potato chip samples using both the K-State emoji scale and P&K scale. Participants in each country used the emoji

scale in a similar manner and the scale was able to discriminate across stimuli. The results demonstrated the K-State emoji scale is valid in the United States and China and is suitable for measuring children's emotional response to products.

In a separate study, experiments using 299 flavored potato chip consumers in the US and China were conducted to understand the suitability of the K-State emoji scale for measuring adult consumers' emotional response to food products. Adults in each country were asked to evaluate five different flavored potato chips using a traditional 9-point hedonic scale and the K-State emoji scale. The K-State emoji scale was found to be as equally discriminating as the 9-point scale. The scoring from the two scales followed similar distribution patterns and were highly correlated. When asked about the K-State emoji scale's appropriateness for evaluating the flavored potato chips, a higher number of participants in China felt it was "appropriate" or "very appropriate" for the task compared to participants in the US. The K-State emoji scale is applicable in both countries, however, may be better received by the Chinese adult consumer.

The findings in this thesis demonstrate the potential of the K-State emoji scale. The scale has shown promising results in both the US and China with children and adults. The new method would allow for easier research across cultures as the scale is visual and requires no translation. Considering the surge in emoji usage, the scale is both topical and provides additional justification for the use of emoji in research.

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I would like to thank my committee members, Dr. Kadri Koppel, Dr. Sara Gragg, and Dr. Martin Talavera, for providing their guidance throughout my time here.

Lastly, I would like to thank my family and Jordan for their love and encouragement.

Dedication

This thesis is dedicated to my Nana Del and Grandma Gladys. Thank you for teaching me how to be a strong woman

Chapter I – *Literature Review*

Introduction

In today's world, children are considered to be an important consumer group due to their ever-growing influence in the buying decisions of families. As industries aim to develop products for this young demographic, consumer research is needed to better understand their needs, wants, and desires. Typical consumer research methods, however, are not always suitable for use with children. They may be too complex, require too much reading, or not resonate with children. Additionally, some methods used with adults may have few or no suitable alternative for use with kids, for example, the measurement of consumer emotional response. Due to the dearth of available methods, researchers have been looking for new ways approach consumer research with children.

Consumer Research Methods for Kids

Similar to research with adults, one of the most popular types of information collected about products from children is hedonic response. Traditionally, a 9-point hedonic scale ranging from "dislike extremely" to "like extremely" is used with adults, however, the scale has been modified to be more appropriate for use with children (Kroll, 1990). This modified scale, the P&K (super good/super bad) scale, was adapted by Kroll (1990); he changed the wording of the scale points to resonate better with children (Kroll, 1990). The P&K (super good/super bad) scale was validated in a study using children between the ages of 5-10 (Kroll, 1990). It was compared to the traditional 9-point hedonic scale and a 9-point facial scale and was found to discriminate best across stimuli in the study (Kroll, 1990). It remains a popular method for use with children as it is valid and relatively simple, however, it requires the child to know how to read.

Another early method introduced for research with children is pictorial scales (Moskowitz et al., 2012). The benefits of pictorial scales are that they are visual, easy to use, and may resonate better with children. In addition to children, these methods may work well for research with population with limited reading or language skills, or with diverse populations who may not all speak the same language at the same level. There are several examples of these types of scales such as a star-based or smiley-face scales; however, many available scales are not ideal as they may appear outdated or the depictions may be biasing to some children (Figure 1-1). Additionally, scales that combine pictorial and written anchors, such as the scales in Figure 1-1, could be interpreted differently by children based on whether they read the anchors or just look at the images.

Figure 1-1. Examples of Pictorial Scales (MacFie, 2007)

In a review of child-appropriate sensory methods, Guinard laid out the best methods for children at each developmental age (Guinard, 2000); these are based on Piaget's stages of cognitive development. For example, a child in the "pre-teen" age group between 8-12 years old typically has strong enough verbal and reasoning skills to complete tasks like paired comparison, discrimination, and attribute evaluation (Guinard, 2000). In addition to the quantitative-based methods discussed, children can also participate in qualitative research such as interviews and

focus groups (Guinard, 2000). No matter the type of research chosen, special care must be given to design research that is appropriate for the targeted age group in order to collect meaningful data (Guinard, 2000; Laureati, Pagliarini, Toschi, & Monteleone, 2015). Since limited child-appropriate methods exist, specifically when trying to measure emotional response, this can be a challenge for researchers.

Emotion & Consumer Research

The measurement of consumer emotions in response to products, specifically foods, has become of greater interest to researchers as it can offer additional learnings to complement more traditional hedonic information. When looking at emotions, there are two dimensions to consider: valence and activation (Hepach, Kliemann, Gruneisen, Heekeren, & Dziobek, 2011). Emotional valence ranges from positive to negative emotions (happy/sad) while activation deals with the arousal level of the emotion (Hepach et al., 2011). For example, a positive, high arousal emotion would be excited, and a negative, low arousal emotion would be bored. In consumer research, emotional valence typically explains the majority of the variance in the data (Schouteten, Verwaeren, Lagast, Gellynck, & De Steur, 2018a; Schouteten, Verwaeren, Gellynck, & Almli, 2018b).

Many methods exist for measuring emotional response. Instrumental and technology-based methods such as autonomous nervous system response and facial expression recognition offer interesting alternatives with potentially less room for personal bias compared to more traditional methods for measuring emotion (Danner, Haindl, Joechl, & Duerrschmid, 2014); however, these methods can require expensive equipment or software that is not accessible to all researchers. Quantitatively, researchers can use methods such as the EsSense Profile – a method using 39 emotional terms representing a range of emotions that consumers rate on a 5-point intensity scale

– to measure consumer's emotional response (King & Meiselman, 2010). Other modifications to these types of methods exist as well, such as EsSense25, which is a truncated emotion word list based on the original method that has been reported to be less taxing and equally effective (Nestrud, Meiselman, King, Lesher, & Cardello, 2016). Check-all-that-apply or CATA can also be used with emotion words to evaluate emotional response. Pelsmaeker, Schouteten, and Gellynck (2013) looked at the method for use with children in an evaluation of milk products. School children in Belgium evaluated the samples with 20 emotional words; these words were successfully able to discriminate across samples and create distinct emotional profiles for the products (Pelsmaeker, Schouteten, and Gellynck, 2013). The CATA method can be used to measure adult emotional response to food products using emotional words as well, showing adequate emotional depth in data and discrimination across stimuli (Ng, Chaya, & Hort, 2013). Visual methods, such as the PrEmo method, can be valuable as some emotions are difficult to put into words (Desmet, 2005). Additionally, these non-verbal, visual methods can be considered easier or less fatiguing than more complex emotion methods which is of value when conducting large tests with many samples. Non-verbal or visual-based methods are also useful when conducting research across cultures and/or countries as emotions are challenging to translate (Ares, 2018). For example, a study by Curia, Hough, Martinez, and Margalef (2001) experienced challenges when translating the traditional 9-point hedonic scale for Argentine consumers. Spanish is the official language in Argentina; however, different variations of Spanish are spoken in different Latin American countries and places like Spain. These types of language complexities make translation difficult for researchers (Curia et al., 2001).

Emoji in Research

Emoji have become increasingly relevant in popular cultures, and consequently, research as well. As define by Merriam-Webster, an emoji is "any of various small images, symbols, or icons used in text fields in electronic communication … to express the emotional attitude of the writer, convey information succinctly, communicate a message playfully without using words, etc." (Emoji [Def. 1]). The benefits of this ubiquitous, emotion-based medium include being visual, intuitive, and resonating well with a range of populations, such as across cultures and age groups; these factors make them an appealing medium for use in consumer research. In order to be effectively used in research, it is important to understand how consumers read the meaning of emoji. Jaeger and Ares (2017) explored Chinese consumer's interpretations and emotional associations of different facial emoji. An online study was conducted in which consumers were shown facial emoji monadically and asked to choose the emotional words they most closely associated with that emoji; questions were set up using a check-all-that-apply format and 39 emotional terms were provided (Jaeger & Ares, 2017). From this study, the research team found strong associations for 15 of the 33 emoji tested, indicating that for these emoji, most consumers were interpreting them in the same way; others had weaker associations that were still promising (Jaeger & Ares, 2017). A small group of emoji had several different interpretations, indicating those may not be the most appropriate for use in consumer research (Jaeger & Ares, 2017). This foundational research gave a basis for expansion into other demographics outside of China (Jaeger & Ares, 2017).

Gallo, Swaney-Stueve, and Chambers (2017a; 2017b) also looked at emoji and emotional word association, but their research centered around children. They carried out a series of focus groups and evaluations with children between the ages of 8-11 (Gallo, Swaney-Stueve, & Chambers,

2017a; Gallo, Swaney-Stueve, & Chambers, 2017b). In the first part of the research, the children were asked to complete a series of discussions and evaluations on food-related stimuli using both emotion words and emoji to describe their feelings towards the stimuli, and also described the emotional valence they assigned to the discussed emoji (Gallo, Swaney-Stueve, & Chambers, 2017a). In the second part of the research, the children were asked to evaluate both visual (pictures) food stimuli and tasted stimuli using both emoji and emotional words presented in a CATA question format (Gallo, Swaney-Stueve, & Chambers, 2017b). When evaluating tasted food, children used more positive emoji and emotional words than when evaluating visual food stimuli (Gallo, Swaney-Stueve, & Chambers, 2017b). The research team found that children in this age group (8-11 years old) are capable of using both emoji and emotional words to express their food-related feelings, and though each had their benefits, the emoji were more engaging and may help younger consumers express more complex emotions (Gallo, Swaney-Stueve, & Chambers, 2017b). This sparked interest and offered initial support for emoji as a medium for consumer research with children.

Another example of foundational work using emoji was a social listening-type study by Vidal, Ares, and Jaeger (2016) that analyzed Twitter data. The research team looked at over 10,000 tweets about various eating situations and analyzed the emoji used to describe the writers' emotions (Vidal, Ares, & Jaeger, 2016). In the end, the study supported that consumers do use emoji to express their food-related emotions (Vidal, Ares, & Jaeger, 2016); this further supports the use of emoji to measure emotional response in consumer research.

One of the most prevalent emoji-based methods in literature has been the check-all-that-apply (CATA) method. In a study by Jaeger, Vidal, Kam, and Ares (2017), US and Chinese consumers evaluated different written food stimuli using a CATA question format with 33 facial emoji as

response choices. They found that consumers typically picked 1-2 emoji to describe their feelings towards each stimuli (Jaeger, Vidal, Kam, & Ares, 2017). Adequate discrimination was seen across stimuli in both countries and response patterns showed high repeatability (Jaeger, Vidal, Kam, & Ares, 2017). The research team expressed that the method was promising, however more research was needed. In a series of studies by Schouteten and others (2018a; 2018b), the CATA emoji method was used with children. Participants in Belgium tasted and evaluated different speculoos cookies in both studies (Schouteten et al., 2018a; Schouteten, et al., 2018b). For the first study, children evaluated the samples using the same CATA method with the same emoji used by Jaeger, Vidal, Kam, & Ares (2017) (Schouteten et al., 2018a). They found that the children were using approximately 3 emoji to describe each sample and that the method was able to discriminate across tasted stimuli (Schouteten et al., 2018a). In the second study, two different lists of emoji were utilized to carry out the same type of CATA method for evaluating speculoos cookies (Schouteten et al., 2018b). One emoji list was taken from the previously discussed focus group research by Gallo and others (Gallo, Swaney-Stueve, & Chambers, 2017a; Gallo, Swaney-Stueve, & Chambers, 2017b), and the other was a product-specific list that the research team modified from Jaeger, Lee, Kim, Chheang, Jin, and Ares (2017) (Schouteten et al., 2018b). Again, children used about 3 emoji to describe their emotional response to each stimuli (Schouteten et al., 2018b). The researchers found the product-specific emoji list was more discriminating than the general list but felt more research was needed to better understand and support the method (Schouteten et al., 2018b).

One issue encountered by researchers working with emoji is that many emoji images are trademarked and permission is needed for their use in research. Unfortunately, the majority of publications do not cite the necessary permissions and therefore, without permission, should not

be using the emoji for their research. This was noticed in much of the available literature and creates a limitation for researchers using emoji in consumer tests

Objectives

The overarching objective of this research was to develop and validate an emoji-based scale for evaluating emotional response to consumer products that was suitable for use with children. This would meet the needs for a more kid-friendly method, while introducing an updated, open-use facial scale with potential applications spanning across country, cultural, and language barriers. In order to accomplish this, several smaller objectives were set. First, agreement on the sequencing of the emoji in the scale was desired to ensure the participants intuitively understood the scale. Second, the discriminative ability of the scale was evaluated as this is an important characteristic of any consumer research method. Finally, the research team would assess the scale's suitability for measuring emotional response in children and its potential appropriateness for use across countries and cultures. The multi-phase research discussed in this thesis was used to achieve these objectives.

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Chapter II - *The emoji scale: A facial scale for the 21st century*

The content of the following chapter is from a paper of the same title, by Swaney-Stueve, Jepsen, and Deubler, published in *Food Quality and Preference*; it may be accessed using the following link: https://doi.org/10.1016/j.foodqual.2018.03.002

Introduction

American family structures have changed over time to be more democratic, giving children greater influence in decision making (Mintel, 2016). This shift has increased the importance of children as consumers, adding value to their opinions and reactions to products. In addition to the change in family structures, the American family is becoming increasingly diverse in race and ethnicity (Mintel, 2016). These changes may affect consumer research methods in the future through new challenges such as the need for multilingual surveys and the development of more suitable methods for children of all ages.

Measuring emotional response is one method used for evaluating product acceptance with children (Laureati, Pagliarini, Toschi, & Monteleone, 2015). One method that exists is the Check-All-That-Apply (CATA) approach. A study by Pelsmaeker, Schouteten and Gellynck involving 513 primary school children in Belgium evaluated the consumption of plain and flavored milks, as well as the emotional response to six milk brands (2013). The CATA method was employed to compare the brands using a mix of positive, negative, and neutral emotion words (Pelsmaeker, Schouteten, & Gellynck, 2013). The CATA method was appropriate for discriminating between the brands, with 19 of the 20 emotion words showing significant differences across brands (Pelsmaeker et al., 2013). This method is suitable for children with developed language skills but may be challenging with children who cannot read on their own. An alternative method for evaluating emotional response is via observation (Laureati et al.,

2015). Zeinstra, Koelen, Colindres, Kok, and de Graaf performed an observational study on seven liquids evaluated by six children, ages 5–13 (2009). The children ranked the liquids by preference and each session was recorded for facial expression analysis. The study found that the observation of facial expressions is suitable for measuring stimuli that induce a negative response, but not discriminating enough to evaluate different degrees of liking for this demographic (Zeinstra, Koelen, Colindres, Kok, & De Graaf, 2009). Due to the low number of suitable methods for assessing emotional response as a means for evaluating consumer acceptance in children, hedonic methods may also be used.

The 9-point hedonic scale is one of the most common tools in consumer research. Kroll adapted the traditional 9-point scale for children by changing the verbal anchors to more child-appropriate terms to create the P&K scale (Popper & Kroll, 2011). Kroll tested the P&K scale compared to the traditional 9-point hedonic scale and a 9-point facial scale with children ages 5–10 (Kroll, 1990). The P&K scale was the most discriminating between stimuli and was accepted as a suitable method for children over five years old (Kroll, 1990, Popper and Kroll, 2011). However, in a study on adult Argentine consumers, the translation of the traditional hedonic scale showed mixed results (Curia, Hough, Martinez, & Margalef, 2001). When participants were given the nine scale anchors in a randomized order and asked to rank them from best to worst, about 30% ordered them differently than the English scale (Curia et al., 2001). Accurate translation of verbal scales, such as the P&K scale, is a concern when performing consumer research across cultures or borders. Verbal scales are also problematic when testing with young children who may find it difficult to read and comprehend anchors (Lawless & Heymann, 2010). These concerns have led to the examination of pictorial-based scales as a more versatile alternative (Moskowitz et al., 2012).

Pictorial facial scales have been used as a method for measuring acceptance in children (Moskowitz et al., 2012), but current scales have become outdated and may not function well across all demographics (Figure 2-1). Other pictorial scales exist for various uses, such as pain assessment in children (Wong & Baker, 1988). Emoji have emerged as a new method for determining acceptance; they have seen a rapid growth in popularity, becoming ubiquitous worldwide (Jaeger & Ares, 2017). This broad recognition makes emoji an advantageous choice for evaluating acceptance, specifically emotional response.

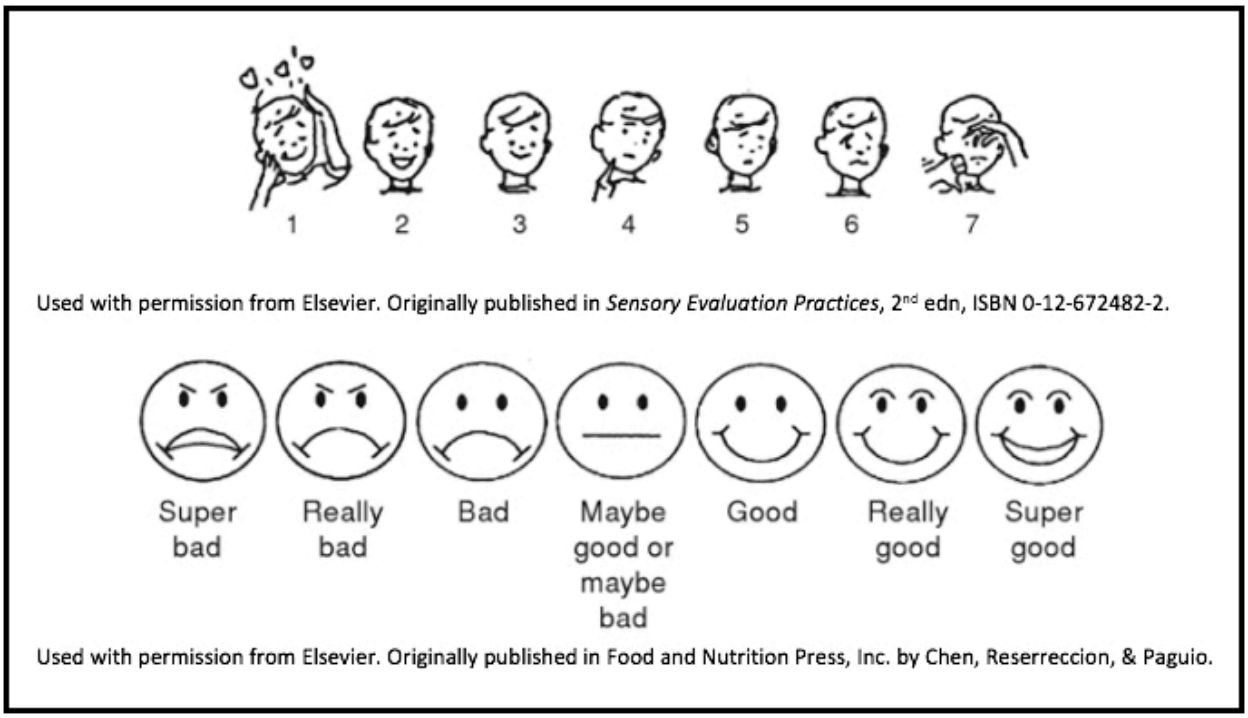


Figure 2-1: Current pictorial scales

Vidal, Ares, and Jaeger began researching emoji as a method for assessing emotional response to a food stimulus by analyzing tweets about food and eating occasions (2016). These studies supported that Twitter could be a source for collecting the emotional response to food products, and validated the idea that consumers use emoji to express their food-related emotions (Vidal, Ares, & Jaeger, 2016). CATA responses to food stimuli using emoji were evaluated by Jaeger,

Vidal, Kam, and Ares (2017b). They found the emoji were able to discriminate between stimuli and groups of consumers, but the results are preliminary and more research is needed to develop the method (Jaeger et al., 2017b) Additionally, Jaeger and Ares studied the most common meaning associated with 33 emoji according to Chinese consumers (2017); understanding the dominant meaning is critical when assessing the validity of other test methods using emoji.

When discussing emotions, there are two dimensions to consider: valence and activation level (Spinelli, Masi, Dinnella, Zoboli, & Monteleone, 2014). The valence differentiates positive and negative emotions, where activation level corresponds with arousal (Spinelli et al., 2014). Jaeger, Lee, Kim, Chheang, Jin, and Ares looked at these two dimensions as part of their research comparing emotion word surveys to emoji surveys (2017a). They found greater discrimination existed between emoji of different valence than emoji of different arousal (Jaeger et al., 2017a). Jaeger et al. have called out the need for new methods to examine the emotional response of food and food-related stimuli (2017b). Much of the available research on emoji and emotional response has been conducted involving adults. Gallo, Swaney-Stueve, and Chambers began conducting emoji research with children ages 8–11 (2017a). They held three focus groups including both genders. The participants evaluated different food stimuli using emotional words and emoji. Only face emoji were used in the study; the list was vetted by a researcher for relevancy to the task and study demographic. Emoji valence was analyzed and low performing emoji were flagged to be removed from future studies (Gallo, Swaney-Stueve, & Chambers, 2017a). This research greatly influenced the scale discussed in this paper.

A new pictorial scale, the emoji scale, offers a modernized option with promising recognition around the world. The purpose of this research was to compare the liking and emotional response of experiences and foods within a category using the P&K scale and emoji scale, respectively.

Children in the United States, ages 8–11, assessed the suitability of the emoji scale and evaluated it as an alternative to the P&K scale for measuring acceptance.

Materials and Methods

The following research involving human subjects was approved by Kansas State's Institutional Review Board (IRB #5930).

Online Study

Two hundred and fourteen children, ages 8–11 (35% 3rd grade, 32% 4th grade, 33% 5th grade), participated in an online study in Olathe, Kansas. Participants were recruited via email to the parent or legal guardian in the Sensory and Consumer Research Center database. Equal numbers of both genders were selected with their parent or legal guardian's consent and entered into a drawing for monetary prizes upon successful completion of the survey. Children who had participated in previous food emotion studies were excluded.

A parent or legal guardian first completed the screener and initial section of the questionnaire. The child then completed the online questionnaire evaluating their liking and emotional responses to different food and non-food experiences under the supervision of the parent or guardian. The food experiences were pizza flavors and the non-food experiences were situations. Presentation order of the liking and emotional response sections was randomized across participants. Pizza flavor and situation orders within each section were consistent across participant surveys. Figure 2-2 and Figure 2-3 provide examples of the liking and emotional question formats. The wording of the two formats was used to differentiate between liking and emotional response. The online study was conducted using Compusense Cloud (Compusense, Inc., Guelph, Ontario, Canada).

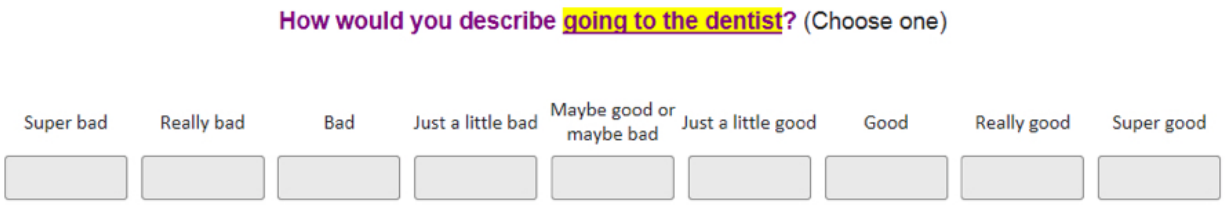


Figure 2-2: Example of liking question format

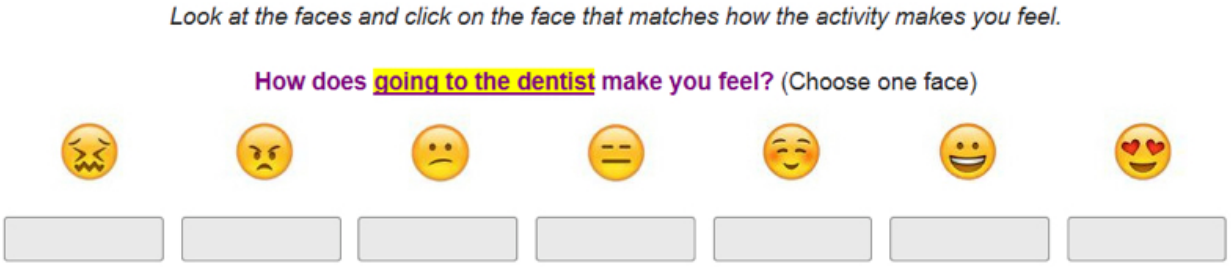


Figure 2-3: Example of emotion question format

Food and non-food experiences

Pizza flavor was selected as a study topic based on the high emotional response to pizza exhibited in a previous study of the same age group (Gallo et al., 2017a). Seven pizza flavors were evaluated in the questionnaire: cheese, pepperoni, sausage, chicken alfredo, taco, buffalo chicken, and mushroom and onion. All are recognizable American pizza toppings. The researchers felt the discrimination ability of the scale could be better tested using different flavor varieties within one food product category rather than using foods from a variety of product categories that had more overall differences. If the scale could discriminate between products in the same category, it could be inferred that the scale would also discriminate between products in different categories.

The situations were chosen for their presumed appropriateness for children in the study's demographic. The survey included nine situations: baking cookies, going on a field trip, going on a picnic, reading a book, going to a museum, playing with sidewalk chalk, going to the dentist, cleaning your room, and getting a stomach ache. All experiences were chosen to evoke a broad

range of liking and emotional response to encourage the use of the full scales; this rationale was utilized in a previous food and emotion study and was effective (Gallo, Swaney-Stueve, & Chambers, 2017b).

Pictorial emoji scale

Emoji in the scale were chosen based on a previous study in which Gallo, Swaney-Stueve, and Chambers held focus groups with children ages 8–11 (2017a). In one part of the study, children were tasked with sorting emoji they associated with food emotions into three categories: positive, negative, and neutral (Gallo et al., 2017a). Researchers chose the seven scale points because the faces were used frequently and consistently characterized in the same valence class in previous research, were non-redundant, and were clearly used to communicate an emotion. Additionally, several studies have presented results that support the reliability and use of 7-point scales (i.e. Cicchetti et al., 1985, Miller, 1956, Preston and Colman, 2000). The Apple iOS 8.3 emoji images in this study were used with permission (Apple, Inc. Cupertino, California).

Data analysis

An analysis of variance (ANOVA) with the Tukey's Honest Significant Difference (HSD) adjustment was performed on the liking and emotional response data to calculate and compare mean scores. Linear correlations were found between the liking and emotional response means and presented as R^2. The comparison of scales of different lengths using linear correlation is supported by a study from Colman, Norris, and Preston comparing five- and seven-point scales using four different correlation equations (1997). They found no significant difference between the linear correlation and more complicated equations, concluding the linear fit is best for most applications (Colman, Norris, & Preston, 1997). The significance level was 5%. All results were analyzed with XLSTAT 2015 (Addinsoft, Paris, France).

Results

Mean scores for the liking and emotion questions are provided in Table 2-1, Table 2-2. The liking and emotion response means were similar throughout the study based on the Tukey's HSD letter designations. The pizza flavor and situation-based liking and emotion questions had similar response distribution patterns; the distributions for each experience are provided in Fig. 2-4, Fig. 2-5. When divided by grade (3rd-5th), scores were statistically similar across all experiences ($p < 0.05$). Cheese and pepperoni pizza flavors had the most positive liking and emotional response, while mushroom and onion pizza flavor had the most negative liking and emotional response. Baking cookies and going on a field trip had the most positive liking and emotional response for the situations and getting a stomach ache had the most negative liking and emotional responses. The participants used the entire super good/super bad scale (9 points) and the entire pictorial emoji scale (7 points) for the food and situation questions. There was no indication of bias for any individual emoji within the scale as no emoji was used more frequently for all situations or pizza flavors. This is supported by the distribution of responses displayed in Figure 2-4 and Figure 2-5.

Table 2-1: Pizza flavor liking and emotional mean response

Pizza Flavor	**Liking[1]**	**Emotion[2]**
Cheese	8.0^{a}	6.1^{a}
Pepperoni	7.5^{ab}	5.7^{ab}
Sausage	7.1^{b}	5.4^{b}
Chicken Alfredo	5.9^{c}	4.6^{c}
Taco	5.6^{c}	4.4^{cd}
Buffalo Chicken	5.2^{c}	4.1^{d}
Mushroom & Onion	3.4^{d}	2.7^{e}
R^2=0.9997		

Note: Means in the same column with the same superscript are not statistically different at $p<0.05$ according to pairwise comparison with Tukey's HSD.

[1]Liking rated on 9-point hedonic scale.

[2]Emotion rated on 7-point emoji scale.

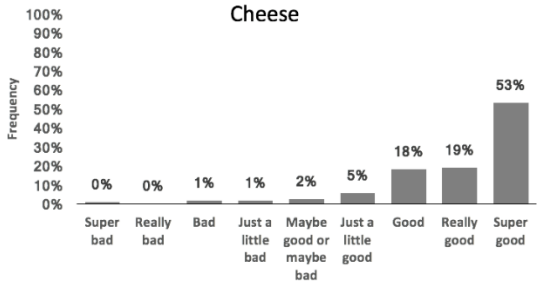
Table 2-2: Situation liking and emotional mean response

Situation	Liking[1]	Emotion[2]
Baking cookies	8.5^{a}	6.6^{a}
Going on a field trip	8.3^{a}	6.4^{a}
Going on a picnic	7.8^{b}	6.1^{b}
Reading a book	7.4^{bc}	5.7^{c}
Going to a museum	7.0^{cd}	5.4^{cd}
Playing with sidewalk chalk	6.6^{de}	5.0^{de}
Going to the dentist	6.4^{e}	4.9^{e}
Cleaning your room	4.2^{f}	3.5^{f}
Getting a stomach ache	1.8^{g}	1.6^{g}
$R^2=0.9990$		

Note: Means in the same column with the same superscript are not statistically different at $p<0.05$ according to pairwise comparison with Tukey's HSD.

[1]Liking rated on 9-point hedonic scale.

[2]Emotion rated on 7-point emoji scale.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30%
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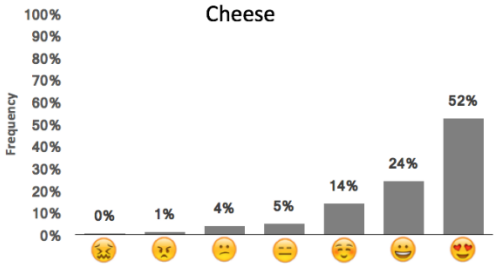
10%
0%
0%
0%
1%
1%
2%
5%
18%
19%
53%
Super bad
Really bad
Bad
Just a little bad
Maybe good or maybe bad
Just a little good
Good
Really good
Super good


Cheese
Frequency
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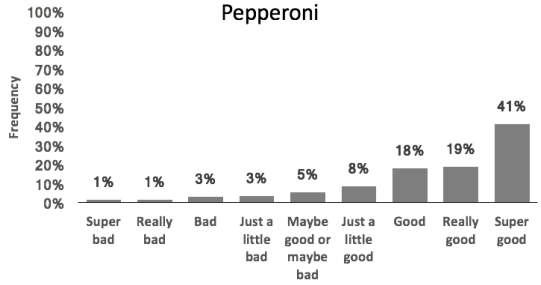
52%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Frequency
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1%
3%
3%
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8%
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19%
41%
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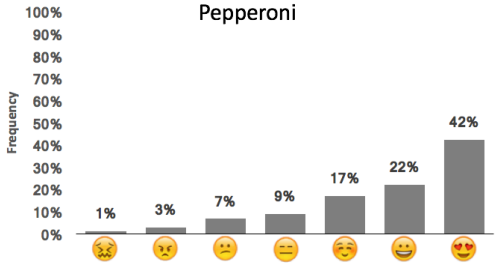
Bad
Just a little bad
Maybe good or maybe bad
Just a little good
Good
Really good
Super good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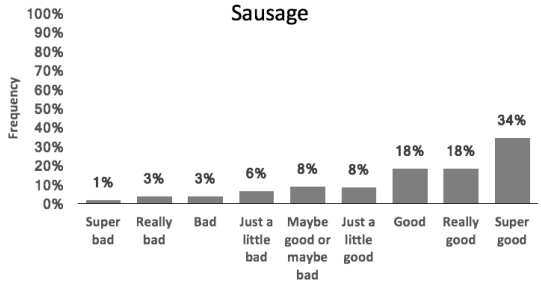
9%
17%
22%
42%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1%
3%
3%
6%
8%
8%
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18%
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Bad
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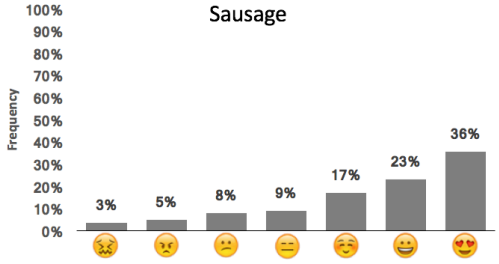
Maybe good or maybe bad
Just a little good
Good
Really good
Super good


Sausage
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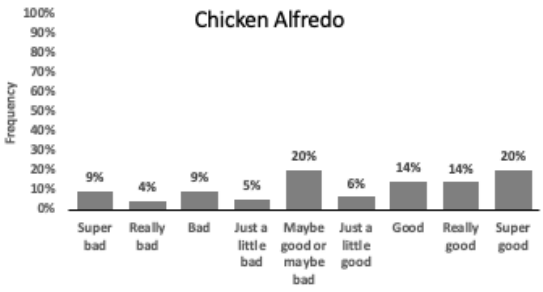
Chicken Alfredo
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9%
5%
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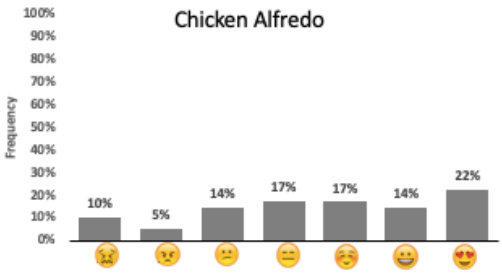
Bad
Just a little bad
Maybe good or maybe bad
Just a little good
Good
Really good
Super good


Chicken Alfredo
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14%
17%
17%
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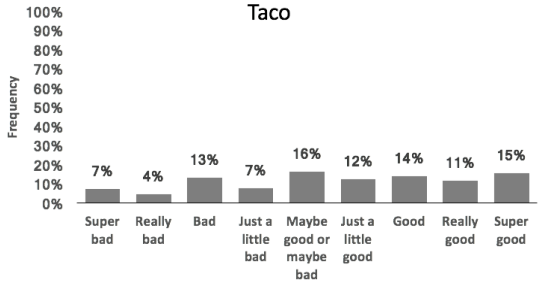
22%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Frequency
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80%
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60%
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10%
0%
7%
4%
13%
7%
16%
12%
14%
11%
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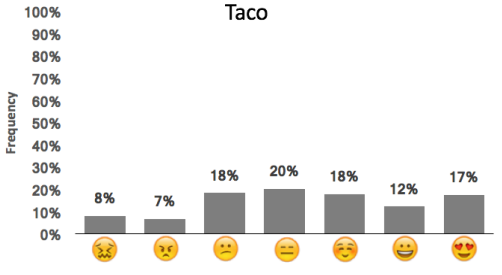
Super bad
Really bad
Bad
Just a little bad
Maybe good or maybe bad
Just a little good
Good
Really good
Super good


Taco
Frequency
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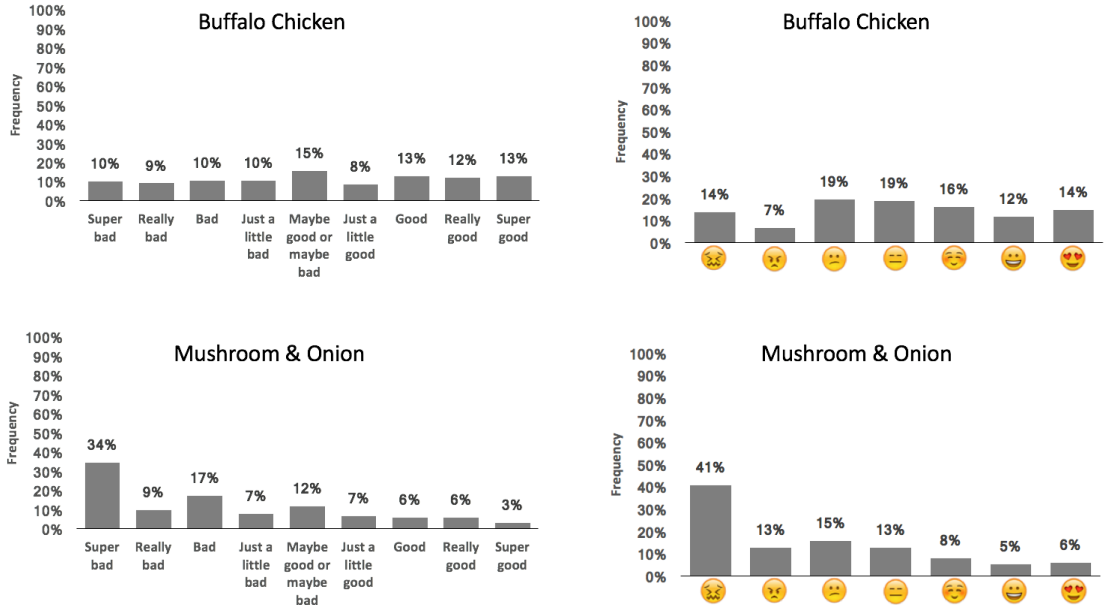
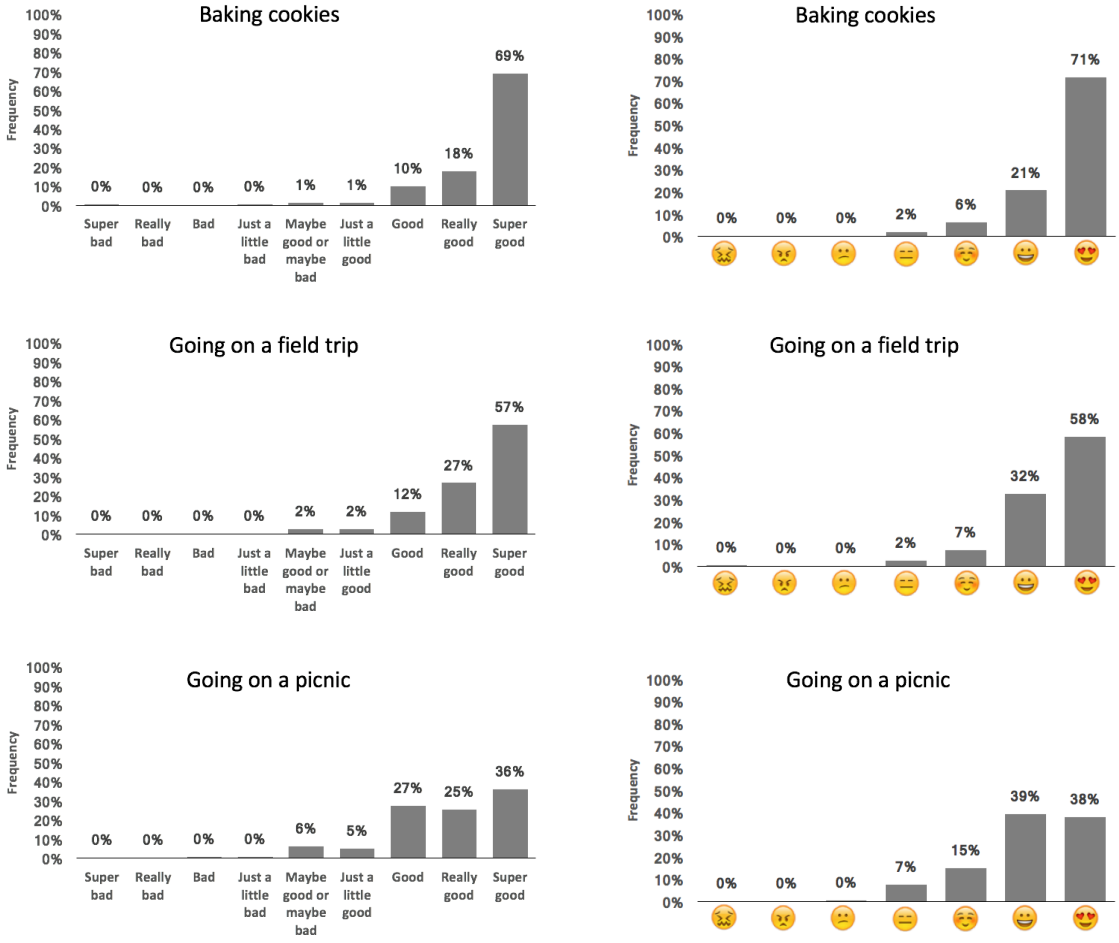
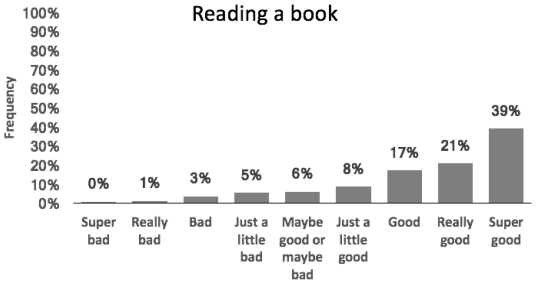


Figure 2-4: Pizza flavor liking and emotion mean frequency




Reading a book
Frequency
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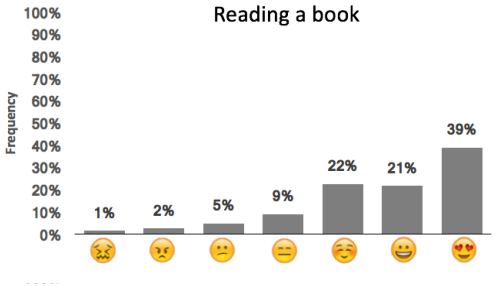
Super bad
Really bad
Bad
Just a little bad
Maybe good or maybe bad
Just a little good
Good
Really good
Super good


Reading a book
Frequency
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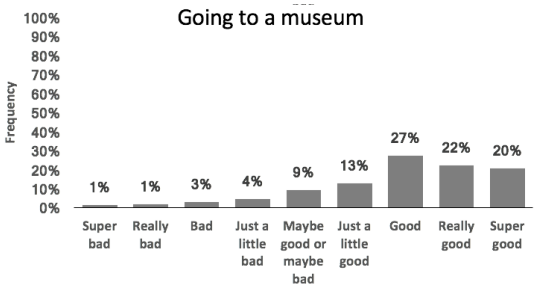
Going to a museum
Frequency
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Super bad
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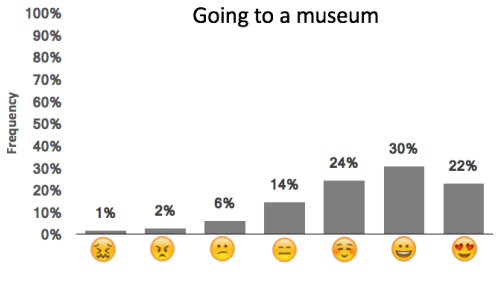
Just a little bad
Maybe good or maybe bad
Just a little good
Good
Really good
Super good


Going to a museum
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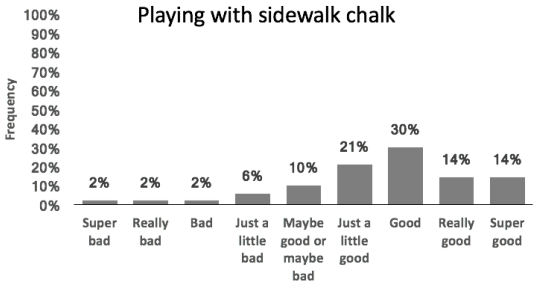
Playing with sidewalk chalk
Frequency
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Just a little bad
Maybe good or maybe bad
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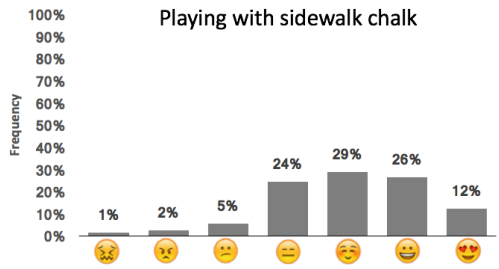
Good
Really good
Super good


Playing with sidewalk chalk
Frequency
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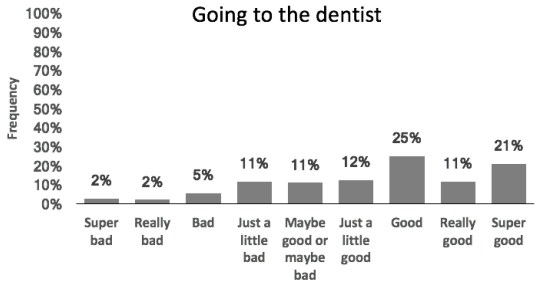
Going to the dentist
Frequency
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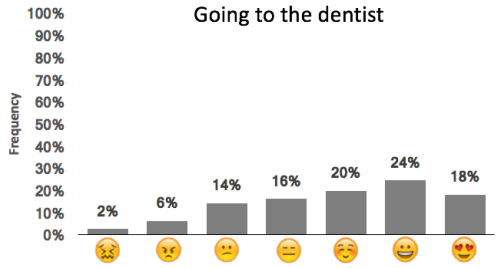
Going to the dentist
Frequency
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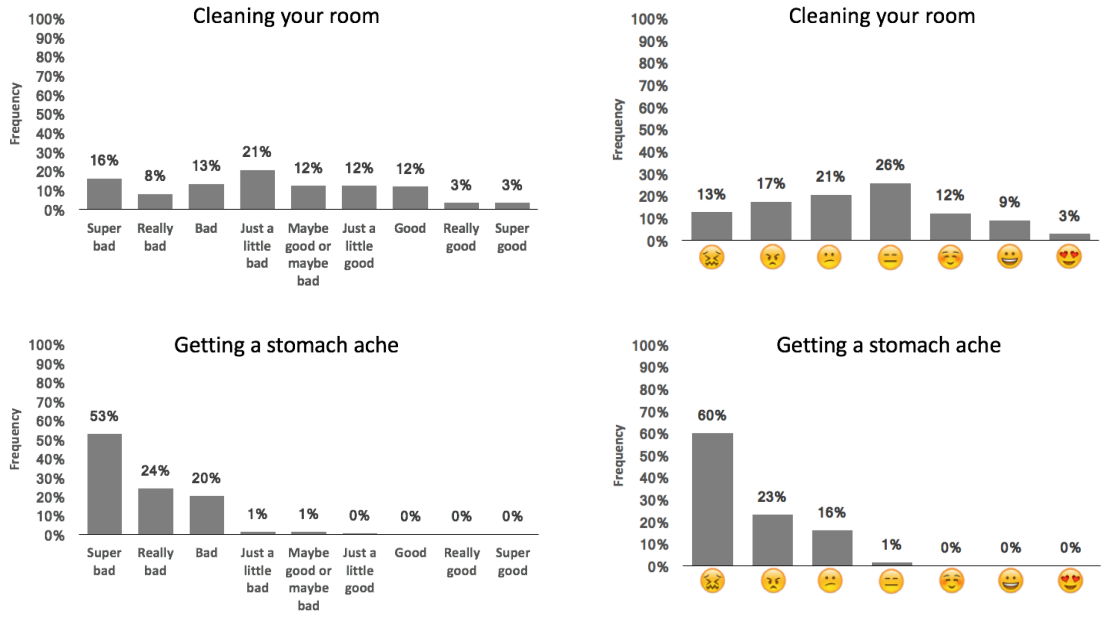

Figure 2-5: Situation liking and emotion mean frequency

Discussion

Overall, the emoji scale proved suitable and was able to differentiate between verbal food and non-food experiences. This aligns with the findings of Jaeger et al. (2017b), who found emoji were able to discriminate between stimuli in a CATA-based test. As discussed by Gallo, Swaney-Stueve, and Chambers in reference to their focus groups, foods with high liking typically elicit positive or happy emotions, while foods with low liking evoke emotions such as anger, sadness, or disappointment (2017a). Children tended to pick positive emoji when referencing their favorite foods (high liking), and negative emoji when referencing their least favorite foods (low liking) (Gallo et al., 2017a). Participants in this study followed that trend for both food and non-food experiences, using positive emoji when liking was high, and negative emoji when liking was low. Though the liking and emotional scales had different numbers of anchors, nine and seven, respectively, their response patterns had similar distributions. When the mean scores are used to order the pizza flavors and situations from highest to lowest, they follow the same order for both liking and emotional response. The research team chose to use seven

scale points, as opposed to matching the 9-point P&K scale, due to the potential for redundancy and mixed meaning between similar (looking) emoji. The seven emoji chosen were discrete in appearance and meaning preventing confusion that may have negatively affected the results.

A strong, positive, linear correlation ($R^2 > 0.99$ for both pizza flavors and situations) between liking and emotion question responses was found. This may indicate that liking and emotional response are interchangeable for children ages 8–11. This aligns with findings from a study on breakfast drinks where valence emotions linearly correlated to liking, while the activation level did not (Gutjar et al., 2015). If more differentiation between liking and emotional response is desired, the emoji would need to be chosen for their activation level instead of valence, as discussed by Spinelli et al. (2014). Differentiation of stimuli with emoji of different activation levels have been used with the CATA method (Jaeger et al., 2017a); further research would be needed to evaluate an emoji scale that tests emotional arousal.

Despite the range in age of the participants, all experiences received statistically similar scores between the three grade levels. This is supported by Jean Piaget's developmental stages. Children ages 8–12 fall under the "concrete operational" stage in which they develop the ability to understand and respond to more complex ideas (Guinard, 2000); because of their developmental similarities, the decision to combine this age range was appropriate.

One limitation of this research was the use of verbal stimuli as opposed to real situations and tasted foods. Piaget's work can again support this; since the 8 to 11-year-old age group has complete understanding and reasoning skills, they are able to appropriately score foods and situations based on the verbal names alone (Guinard, 2000). A study involving adults compared the emotional response to both food names and tasted products (Cardello et al., 2012). The results showed the food names and tasted products were similar in their response patterns but

still showed some differences indicating verbal and tasted stimuli are not interchangeable (Cardello et al., 2012). Future research is needed to determine if differences between verbal food name and tasted product emotional responses are different for children using the emoji facial scale.

Conclusion

The emoji scale proved applicable for measuring emotional response to verbal food and non-food stimuli in children ages 8–11. Due to the high positive correlation between emotional response and liking, the emoji facial scale could also function as an alternative to the P&K scale for this demographic. The emoji used in this study are trademarked by Apple and were approved for this research project.

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Chapter III - *The K-State emoji scale*

Introduction

The focus and needs of marketing and consumer insights has shifted in the digital age with the growing relevance of children as consumers. Firms must stay on the cusp of innovation and engagement with their target market in order to stay relevant, especially when targeting the younger demographics. One method firms use to accomplish this is to appeal to the children's emotions. In turn, evaluating their emotional response to products, specifically within the food industry, has become quite relevant.

With the dearth of available, acceptable methods for this type of research, less traditional mediums are being explored. One example of this is the use of emoji to record reactions to consumer products; there is a growing number of examples showcasing the capabilities of research with emoji in both adults and children (Vidal, Ares, & Jaeger, 2016; Jaeger & Ares, 2017; Jaeger, Lee, Kim, Chheang, Jin, & Ares, 2017; Jaeger, Vidal, Kam, & Ares, 2017; Gallo, Swaney-Stueve, & Chambers, 2017a; Gallo, Swaney-Stueve, & Chambers, 2017b; Swaney-Stueve, Jepsen, & Deubler, 2018; Schouteten, Verwaeren, Lagast, Gellynck, & De Steur, 2018a; Schouteten, Verwaeren, Gellynck, & Almli, 2018b; etc.). As these new methods become available it is critical they are tested for validity across age groups.

Emoji have several benefits from a child research standpoint. First, they are ubiquitous in today's world. When comparing repeatability of responses across US and Chinese adult consumers, Jaeger, Vidal, Kam, and Ares (2017) found emoji offered adequate face validity and were well understood by the demographic. Research on a novel emoji-based method by Toet et al. (2018) also supported that the emotions expressed by emoji are interpreted in a similar manner across many cultures and countries globally. Second, they are non-verbal and can be used across

different cultures and languages. Ares (2018) discussed the benefits of non-verbal methods when conducting cross-cultural research. He noted that direct translations may not be understood under the same context and more specifically, emotion words may have no explicit translation in different languages (Ares, 2018). This reasoning makes emoji specifically valuable for international research and research within diverse populations. Third, emoji may be considered a more age-appropriate medium as compared to verbal or written methods as they are intuitive; designing age-appropriate methods is a critical factor when testing with children (Laureati, Pagliarini, Toschi, & Monteleone, 2015). Other valid methods for measuring emotions, such as PrEmo, also utilize non-verbal imagery to convey emotion, however, the appearance of these methods may not resonate with all consumers globally to the same level as emoji. Similar to PrEmo, children may find that questionnaires using emoji would be less taxing and more "fun" than more traditional methods (Desmet, 2005; Jaeger, Vidal, Kam, & Ares, 2017). These factors make emoji an attractive medium for use in consumer research.

Schouteten, Vanwaeren, Lagast, Gellynck, and De Steur (2018a) have evaluated emoji with children using a check-all-that-apply (CATA) approach and found it suitable for measuring emotional response. These results were in line with a similar type of study where adults were asked to evaluate food name stimuli using an emoji-based CATA method (Jaeger, Vidal, Kam, & Ares, 2017). Schouteten et al. (2018a) had 149 children (mean age of 12 years old) evaluate speculoos cookies for overall acceptance and emotional response. Overall acceptance was measured with a 9-point hedonic scale while emotional response was measured using a CATA approach with 33 emoji used in prior studies (Jaeger et al., 2017). This research showed emoji were able to discriminate across stimuli creating distinct emotional profiles (Schouteten et al., 2018a); the results were similar to the follow-up study conducted by Schouteten, Verwaeren,

Gellynck, and Almli (2018b). A strong correlation between overall liking and emotional valence (positive to negative) was also reported (Schouteten et al., 2018a; Schouteten et al., 2018b). This trend is congruent with the findings of Swaney-Stueve et al. (2018).

Aside from CATA, scale-type, emoji-based methods are of interest to researchers. Kaneko, Toet, Ushiama, Brouwer, Kallen, and van Erp (2018) have developed a grid scale using emoji faces intended to measure the emotional response of consumers to food products. The grid is meant to measure both valence and activation; it has been validated with adults in multiple countries using food images as stimuli (Kaneko et al., 2018; Toet et al., 2018).

Recently, Swaney-Stueve, Jepsen, and Deubler (2018) presented a seven-point emoji-based scale that is suitable for measuring consumers' emotional response to products (Figure 3-1). The scale was validated with children, ages 8-11, in the United States using written food and situational stimuli. The emoji scale was compared to the P&K (super good/super bad) scale and was determined to be an alternative to traditional hedonic methods. Scale development, justification, and further information on the emoji and P&K (super good/super bad) scale are summarized by Swaney-Stueve et al. (2018). The method was promising and relevant, however, the researchers found it challenging to perform and publish research due to the strict permissions needed to use the emoji. The emoji in the scale were trademarked and permission was needed for each use; requesting and receiving permission would be burdensome if the emoji scale was to be used on a larger scale, so an alternative was desired.

Figure 3-1: Original Emoji Scale Prototype (Swaney-Stueve, Jepsen, & Deubler, 2018)

As the world morphs into that of a global economy, the prevalence and value of international research has increased. Still, some countries and their consumers exhibit greater influence due to

factors such as their size and gross domestic product (Country Comparison, 2017). Two of these superpowers are the US and China. Both countries have strong markets and are desirable places to conduct consumer research; for those reasons they were chosen for the present research. Additionally, there has been an increased focus on children as consumers and their purchasing power is being recognized; this has helped in driving the need for methodologies appropriate for consumer research with younger demographics.

The purpose of the current research was to create a comparable emoji scale to Swaney-Stueve et al. (2018) that could be used to measure children's emotional response to products without the restrictions or risk from using trademarked images. Children, ages 8-11, in the United States and China assessed different written and tasted stimuli using an updated emoji-based scale and the P&K (super good/super bad) scale. The first question was to understand whether the results from the previous research could be repeated using an emoji scale with slight visual differences. The second question was to determine if the scale would be suitable for measuring emotional response to tasted stimuli. It was expected that the use of the K-State emoji scale would show results similar to the emoji scale tested in prior research (Swaney-Stueve et al., 2018) as well as the P&K (super good/super bad) scale.

Materials and Methods

The following US-based research involving human subjects was approved by Kansas State's Institutional Review Board (IRB #5930). Research involving human subjects conducted in China was overseen by International Flavors and Fragrances, Inc.

Scales

Three scales were used for this research: Scale A (the K-State emoji scale) (Figure 3-2), Scale B (Figure 3-3), and the P&K (super good/super bad) scale (Table 3-1) (Kroll, 1990). Information

regarding the conception of the emoji-based scale and further information on the initial research is presented by Swaney-Stueve et al. (2018). For the research in China, the P&K scale was translated into Mandarin by native speakers. The K-State emoji scale and Scale B did not require translation and the same versions were used in both countries.

Figure 3-2: Scale A, K-State emoji scale

Figure 3-3: Scale B

Table 3-1: P&K Scale

English	Chinese
Super bad	超级差
Really bad	真的差
Bad	差
Just a little bad	只是一点点差
Maybe good or maybe bad	不好也不差
Just a little good	只是一点点好
Good	好
Really good	真的好
Super good	超级好

Phase 1 – Written Stimuli

Participants in the USA (N=200 per scale) were recruited by the Sensory and Consumer Research Center (SCRC) (Kansas State University, Olathe, KS) and Survey Sampling International (SSI) (Shelton, CT); upon completing the questionnaire, the children were either entered into a raffle for monetary prizes from the SCRC or compensated by SSI. Participants in Shanghai, China (N=101 per scale) were recruited by Vantage Market Research (VMR) (Guangzhou, China) and provided a small gift and monetary compensation for their participation. In both countries, participants were recruited through their legal guardian. Approximately equal

numbers of both genders and age groups (8-11 years of age) participated upon their legal guardian's consent (Tables 3-2 to 3-4). In the USA, the test was self-administered by the children as an online study with supervision from their legal guardian. In China, participants were required to complete the study at a testing center in Shanghai, China with assistance from an interviewer. The Phase 1 questionnaire was translated from English to Mandarin by native speakers.

Table 3-2: Phase 1 Gender Demographics

	USA		China	
	Scale A	**Scale B**	**Scale A**	**Scale B**
Female	64%	56%	50%	50%
Male	36%	44%	50%	50%

Note: USA Scale A N=200, USA Scale B N=200, China Scale A N=100, China Scale B N=101

Table 3-3: Phase 1 USA Age Demographics

	USA	
	Scale A	**Scale B**
3rd Grade (8-9 years old)	28%	31%
4th Grade (9-10 years old)	31%	37%
5th Grade (10-11 years old)	41%	32%

Note: USA Scale A N=200, USA Scale B N=200

Table 3-4: Phase 1 China Age Demographics

	China	
	Scale A	**Scale B**
8 years old	24%	25%
9 years old	28%	27%
10 years old	26%	27%
11 years old	23%	22%

Note: China Scale A N=101, China Scale B N=101

Each child was presented one emoji scale, either Scale A or Scale B, in Phase 1. The child was first asked to confirm their gender and age. Next, they were presented all seven emoji from either Scale A or B, respectively, in a random order and asked to sequence them from the most positive to the most negative emotional response. Next, the children were presented with all situational

and food flavor stimuli monadically and asked to score them with the P&K scale and their assigned emoji scale (example of question formats shown in Figures 3-4 & 3-5). All Phase 1 stimuli are presented in Table 3-5. The order of which scale they evaluated first was randomized across participants. The stimuli in Phase 1 were selected based on past research (Swaney-Stueve et al., 2018) then modified for the study in China based on their appropriateness and relevance for the Chinese participants. Compusense Cloud (Compusense Inc., Guelph, Ontario, Canada) was used for data collection in both countries.

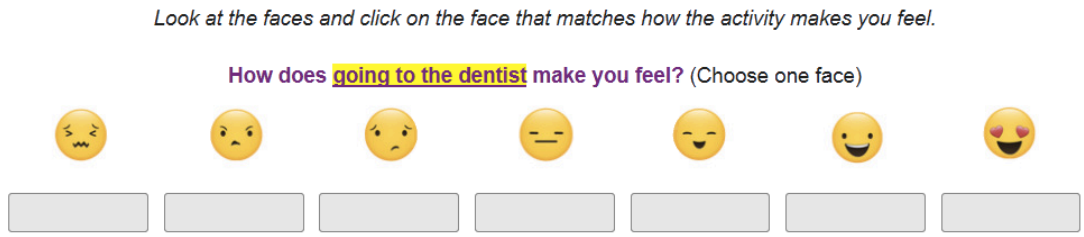

Figure 3-4: Phase 1 - Example of question format using emoji scale

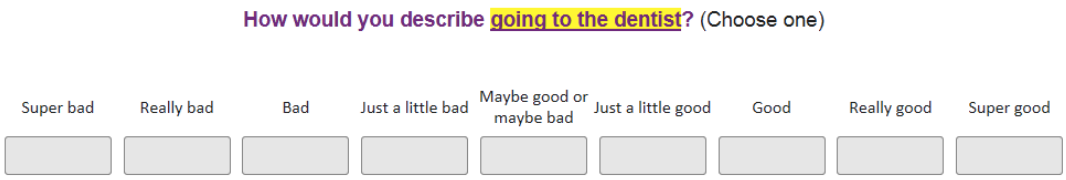

Figure 3-5: Phase 1 - Example of question format using P&K scale

Table 3-5: Phase 1 Written Stimuli – Situations and Food Flavors

USA		China	
Situational	**Food (Pizza Flavors)**	**Situational**	**Food (Potato Chip Flavors)**
Going on a field trip	Cheese	Going on a field trip	Tomato
Baking cookies	Pepperoni	Going to the park	BBQ
Going on a picnic	Sausage	Reading a book	Seaweed
Going to a museum	Taco	Going to a museum	Sizzling squid
Reading a book	Chicken Alfredo	Roller skating	Cucumber
Playing with chalk	Buffalo Chicken	Cooking	Cheese

Going to the dentist	Mushroom and Onion	Cleaning your room	Spicy
Cleaning your room		Going to the dentist	
Getting a stomach ache		Getting a stomach ache	

Phase 2 – Tasted Stimuli

Participants in the USA were recruited exclusively by the SCRC and given monetary compensation for their participation. Chinese participants were again recruited by VMR in Shanghai, China and given a small gift and monetary compensation for their participation. All children were recruited through their legal guardians on the conditions that they were flavored chip consumers, were between the ages of 8-11, and fit into the approximately equal gender and age quotas (Tables 3-6 and 3-7).

Table 3-6: Phase 2 Gender Demographics

	USA (N=101)	China (N=102)
Female	47%	50%
Male	53%	50%

Table 3-7: Phase 2 Age Demographics

	USA (N=101)	China (N=102)
8 years old	28%	31%
9 years old	23%	27%
10 years old	22%	25%
11 years old	28%	16%

In the USA, the test was conducted by the Sensory and Consumer Research Center in Olathe, Kansas; participants completed the evaluation on their own but were overseen by staff. In China, the test was conducted by VMR and participants completed the evaluation with the assistance of an interviewer, which is typical for the country. The stimuli, flavored potato chips, were chosen by researchers in each country, respectively, to elicit a range of responses from traditionally

well-liked flavors to flavors that would be more polarizing (Table 3-8). All potato chips used were Lay's brand (Frito-Lay Inc., Plano, TX) and purchased from local grocers in each country. Chips were served in a randomized order on white paper plates labeled with a three-digit code. Water and plain, unsalted crackers were given as palate cleansers. Children were asked to taste the chip then evaluate it first on the P&K scale then on the K-State emoji scale (example of question formats shown in Figures 3-6 & 3-7); this was done to simplify the exercise for the children. A similar research decision was made by Schouteten et al. (2018a) to keep the emoji used in a consistent order as this was less taxing for the children.

Table 3-8: Phase 2 Stimuli – Potato Chip Flavors

USA	China
Sour cream and onion	BBQ
Cheddar and sour cream	Tomato
Sweet southern heat barbecue	Seaweed
Dill pickle	Cheese
Salt and vinegar	Spicy

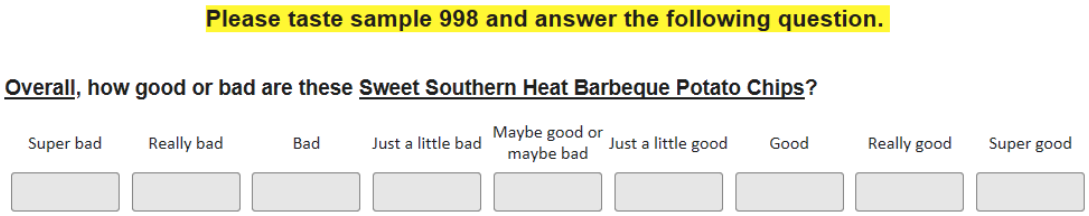

Figure 3-6: Phase 2 - Example of question format using P&K scale

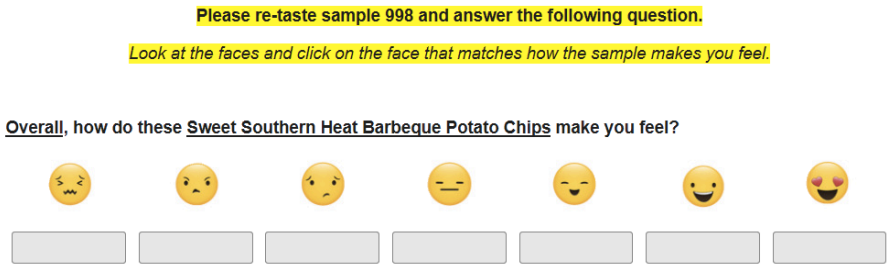

Figure 3-7: Phase 2 - Example of question format using K-State emoji scale

Statistical Analysis

The values assigned to the emoji in the ordering task were used to perform an analysis of variance (ANOVA) with the Tukey's Honest Significant Difference (HSD) adjustment. Liking and emotion responses to both written and tasted stimuli in each country were analyzed by ANOVA with Tukey's HSD adjustment. To evaluate whether there were statistical differences across the participants' responses by age, multi-variate analysis of variance was conducted. All statistical analyses were performed using JMP 13 (SAS, Cary, NC) at a significance level of 5%.

Results

Phase 1 – Scale Evaluation

Results of the ordering task are presented in Table 3-9. Children in both the US and China sequenced the emoji in Scale A (the K-State emoji scale) in the intended order. Each point on Scale A was statistically different from all other points ($p < 0.05$). Scale B was not sequenced as intended by children in either country. Additionally, not all points on the scale were statistically different ($p < 0.05$). Due to the discrepancies with Scale B, Scale A (the K-State emoji scale) was chosen to move forward for further research.

Table 3-9: Scale Ordering Task Results

USA MEAN RESPONSE	0.53 g	0.94 f	1.85 e	2.84 d	4.18 c	4.95 b	5.69 a
CHINA MEAN RESPONSE	0.43 g	1.17 f	1.76 e	2.84 d	4.27 c	5.07 b	5.50 a
Scale A							
USA MEAN RESPONSE	0.83 e	0.55 f	2.08 d	2.76 c	4.50 b	4.63 b	5.64 a
CHINA MEAN RESPONSE	0.77 e	0.52 e	1.80 d	2.94 c	4.57 b	4.77 b	5.61 a
Scale B							

Note: Means in the same row with the same letter designation are not statistically different at $P < 0.05$

Phase 1 - Written Stimuli

Mean scores for all written stimuli are presented in Figures 3-8 to 3-11. Both the K-State emoji scale and the P&K scale were able to discriminate across written stimuli and followed a nearly identical pattern of Tukey's HSD letter designations. The emoji and 9-point scale responses were highly correlated ($R^2 = > 0.99$) for food and situational stimuli in both countries. When the interaction between age and written stimuli was analyzed, no significant difference was found. There were also no significant differences in scoring based on gender (gender*written stimuli).

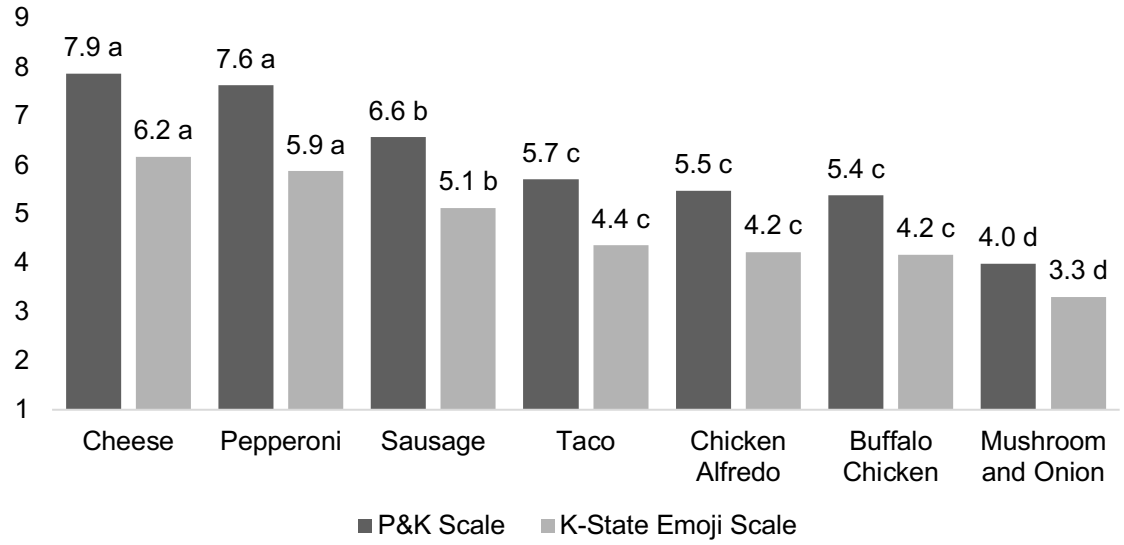

Figure 3-8: USA - Mean Scores for Written Pizza Flavor Stimuli
Note: Means from the same scale with the same letter designation are not statistically different at $P < 0.05$.

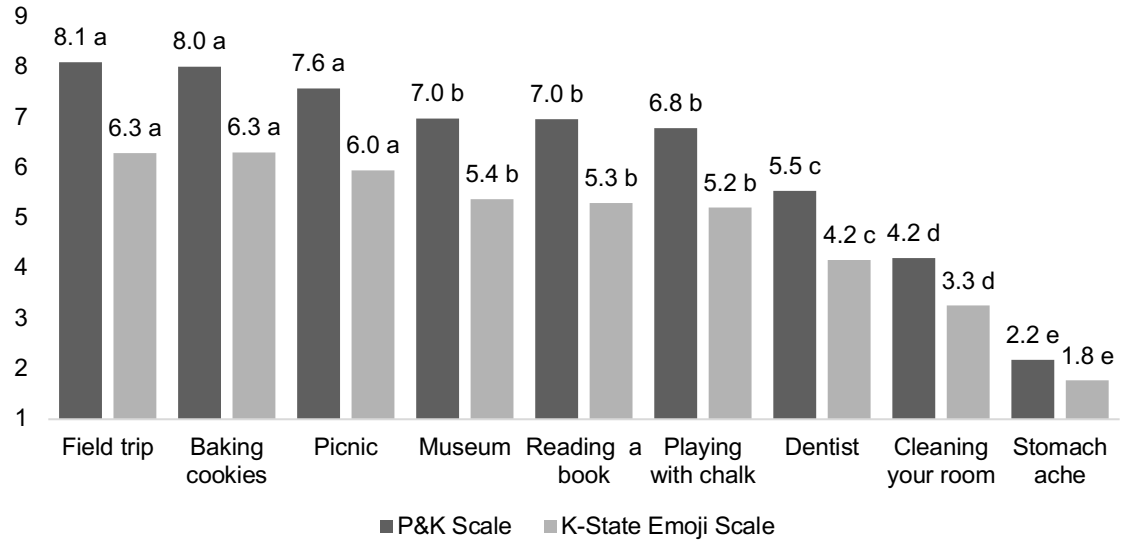

Figure 3-9: USA – Mean Scores for Written Situation Stimuli
Note: Means from the same scale with the same letter designation are not statistically different at $P < 0.05$.

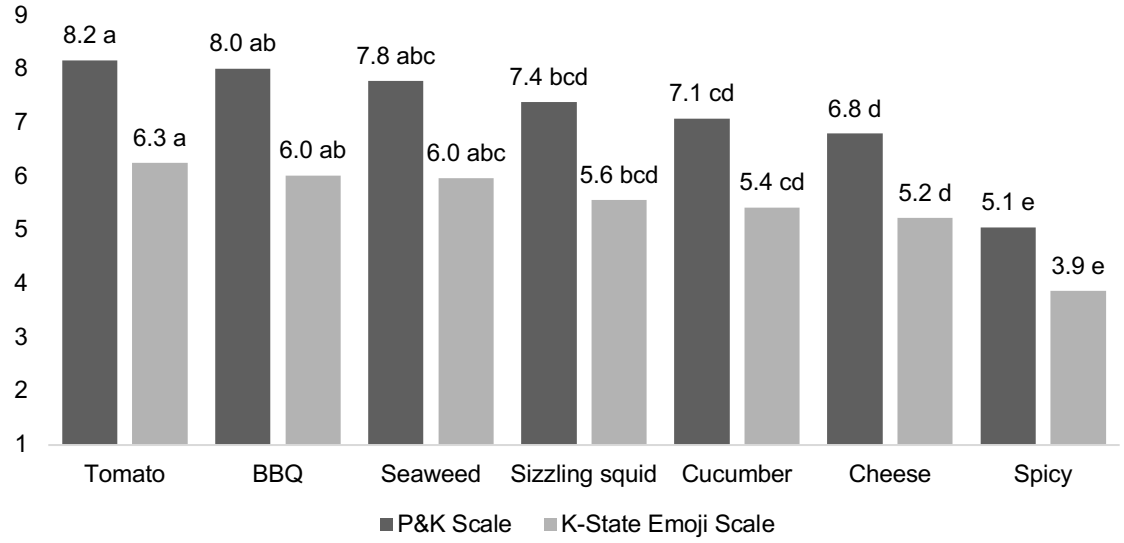

Figure 3-10: China - Mean Scores for Written Potato Chip Flavor Stimuli
Note: Means from the same scale with the same letter designation are not statistically different at $P < 0.05$.

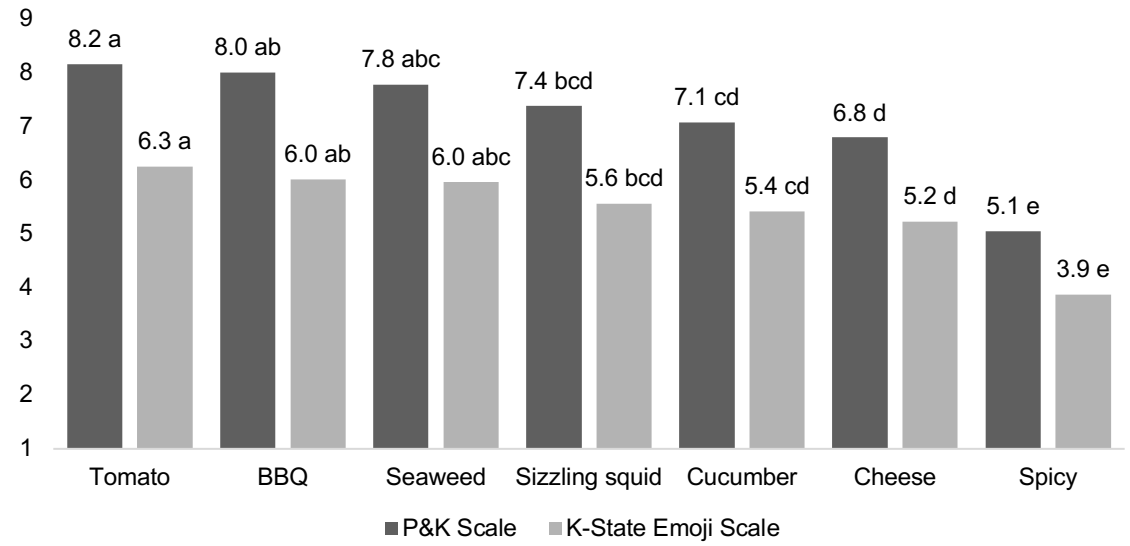

Figure 3-11: China – Mean Scores for Written Situation Stimuli
Note: Means from the same scale with the same letter designation are not statistically different at $P < 0.05$.

Phase 2 – Tasted Stimuli

The mean scores for the tasted stimuli are presented in Figures 3-12 and 3-13. Again the K-State emoji scale and P&K scale mean scores followed the same discrimination patterns shown by the Tukey's HSD designations. Both scales showed similar discrimination across samples. Similarly, the responses from each scale were highly correlated (> 0.99). As with the written stimuli results, there was no statistical interaction between age and tasted stimuli nor gender and tasted stimuli, indicating no difference in scale usage by age or gender was found.

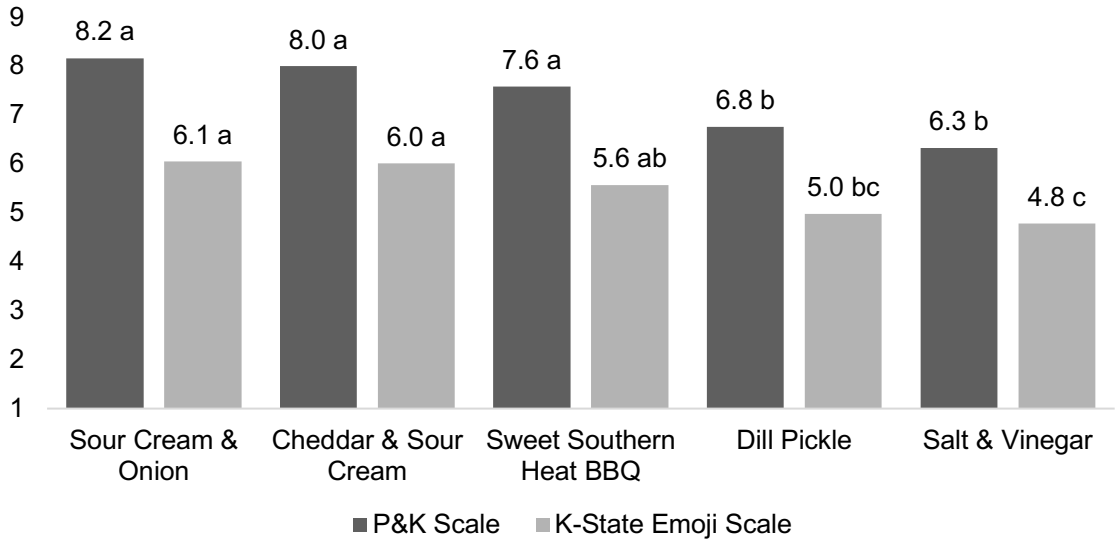

Figure 3-12: USA – Mean Scores for Tasted Potato Chip Flavor Stimuli
Note: Means from the same scale with the same letter designation are not statistically different at $P < 0.05$.

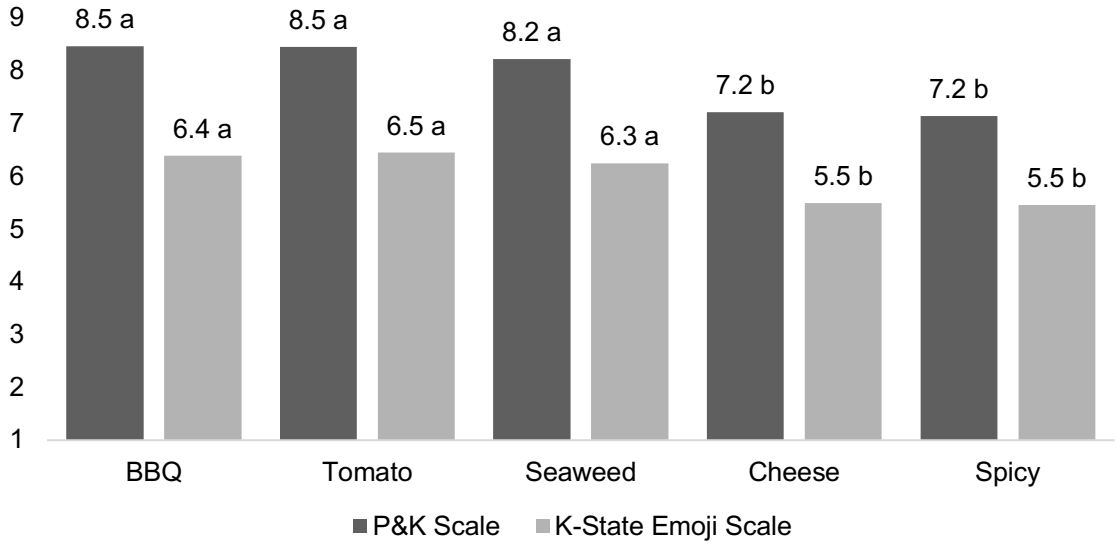

Figure 3-13: China – Mean Scores for Tasted Potato Chip Flavor Stimuli
Note: Means from the same scale with the same letter designation are not statistically different at $P < 0.05$.

Discussion

Scale Evaluation

The intent of the ordering task was to reach agreement on the sequence of the scale to ensure panelists understood the intended arrangement of the emoji and it made intuitive sense to the majority. When Scale A was tested with children in both the US and China, agreement on sequencing was reached. Additionally, because each point on the scale was statistically different from all other points it was inferred that the majority of participants felt each emoji had distinct meaning across valence. In contrast, participants did not reach agreement on the sequencing of the emoji in Scale B. Two of the positive emoji were not statistically different which indicates the children in both countries did not understand their intended emotional meaning; the two most negative emoji experienced the same confusion ($p < 0.05$). Scale A performed as intended in the ordering task which is why it was chosen as the preferred scale for further research under the name the K-State emoji scale.

Phase 1 – Written Stimuli

The K-State emoji scale was shown to be a suitable measure of emotional response to both food and situational written stimuli. The scale discriminated appropriately across stimuli. Stimuli that had an expected positive response such as “going on a field trip” corresponded to means at the positive end of the emoji scale, while stimuli with an expected negative response such as “getting a stomach ache” corresponded to means at the negative end of the emoji scale. The emoji on the scale range from positive to negative valence. Schouteten et al. (2018b) performed correspondence analysis on their emoji-based CATA data and reported that over 90% of the variance was explained by the first dimension, which represented the emotional valence of the emoji; these findings support the results of the present research. While some researchers argue

that methods should include both emotional valence and arousal (i.e. Toet et al., 2018), the authors feel that when conducting research with children there may be a benefit to utilizing simple methods using only valence to ensure the children fully understand the intended emotion. The addition of emotional arousal does not add as much value as valence (Schouteten et al., 2018b), and could make tasks become confusing or taxing for the participant.

The responses to each stimuli using both the K-State emoji scale and the P&K scale were highly correlated indicating the K-State emoji scale could serve as a viable alternative to more traditional hedonic scales. These results are congruous with the findings in our previous research using a similar Apple-based emoji scale (Swaney-Stueve et al., 2018). Similar findings were discussed when overall liking was compared to emoji CATA results (Schouteten et al., 2018a; Schouteten et al., 2018b). Mean scores for samples evaluated with the emoji scales appear much lower than those evaluated with the P&K (super good/super bad) scale, however, this is due to the difference in scale length (seven vs. nine-point scale).

When the interaction between age and written stimuli was examined, there was no statistically significant results, indicating children of all ages used the scale in a similar manner and all data could be analyze as one. Additionally, children used the entirety of the scale; no bias was shown towards any one emoji (Swaney-Stueve et al., 2018).

Phase 2 – Tasted Stimuli

The results of the tasted stimuli were similar to those of the written stimuli. The K-State emoji scale discriminated across samples with traditionally popular flavors showing more positive responses than more polarizing flavors. Since all tasted samples were commercially-available products, and potato chips tend to be a well-liked food, it was expected that the scores would trend positive (Gallo et al., 2017a; Gutjar, de Graaf, Kooijman, de Wijk, Nys, ter Horst, & Jager,

2015; Schouteten et al., 2018a; Schouteten et al., 2018b). This was the case; however, participants still used all scale points to describe their emotional response as seen in Phase 1 ant the previous research (Swaney-Stueve et al., 2018). The scores for each stimuli from the K-State emoji scale and the P&K scale were again highly correlated further supporting that the K-State emoji scale could be an alternative to traditional hedonic scales.

When comparing age and tasted stimuli, the interaction was not statistically significant. From this, the research team inferred children ages 8-11 in both countries were using the K-State emoji scale the same way; this result was in line with phase one. Overall, the results showed no differences by age which is why data from all age groups was analyzed as one.

Several limitations are recognized in the present research. First, the K-State emoji scale was tested in two countries which do not represent emoji usage across the world. The scale has the potential to still be used or understood differently by other demographics, however, other research has shown that emoji do in fact have similar recognition and meanings in many countries and cultures globally (Jaeger, Vidal, Kam, & Ares, 2017; Kaneko et al., 2018; Toet, 2018). Second, participants evaluated the stimuli with two different scales in the same sitting. The P&K scale may have influenced usage of the K-State emoji scale; this influence will be further investigated in the future. Lastly, the results of this study may not apply to all age groups. Future research will focus on validating the scale with different ages and populations globally.

Conclusion

The K-State emoji scale is a suitable method for measuring children's emotional response to both written and tasted products in the US and Chinese markets. Children in both countries were able to sequence the emoji in the intended order and assigned distinct meaning to each one. The K-State emoji scale discriminated across stimuli just as well as the P&K (super good/super bad)

scale. Children used the entire scale to express their emotions. Finally, due to the high correlation between emotion and liking scores, the K-State emoji scale could be used as an alternative to more traditional hedonic approaches and offers the added benefit of being applicable in international consumer research without the need of translation.

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Chapter IV - *The K-State emoji scale: Measuring Adult Emotional Response in the US & China*

Introduction

Researchers across the medical, psychology, and consumer research fields have shown interest in emoji as a means of collecting emotional response. They have been investigated for a variety of applications such as a means of assessing personalities (Marengo, Giannotta, & Settanni, 2017) as well as understanding emotions expressed about food on social media (Vidal, Ares, & Jaeger, 2016). This promising medium has gained much attention because it is non-verbal, easy to use across ages, and ubiquitous.

Measuring consumers' emotional response continues to be a relevant topic. Numerous valid methods exist such as PrEmo, EsSense25, and autonomous nervous system response and facial expression analysis (Desmet, 2005; Nestrud, Meiselman, King, Lesher, & Cardello, 2016; Danner, Haindl, Joechl, & Duerrschmid, 2014). These methods are all fitting, however, can be fatiguing for consumers to perform on many samples and/or require expensive equipment and licenses that are not accessible to all companies and researchers. There are few methods that offer an uncomplicated and accessible way to measure consumers' emotions. Emoji offer a solution to this need while also being free to use, having a non-biasing appearance, and possibly being more engaging and less fatiguing for consumers (Jaeger, Vidal, Kam, & Ares, 2017). In literature, emoji have been investigated as a medium for check-all-that-apply (CATA) by several researchers. Results from all four publications suggest that emoji can be used successfully to discriminate across stimuli with adults and children using a CATA methodology (Jaeger et al., 2018; Jaeger et al., 2017; Schouteten, Verwaeren, Lagast, Gellynck, & De Steur, 2018a; Schouteten, Verwaeren, Gellynck, & Almli, 2018b). The same characteristics that make emoji so relevant for measuring emotional response are also of value for cross-cultural research.

In the ever-expanding global economy, the value of cross-cultural research has increased exponentially. With that comes new challenges and one of the biggest barriers is language (Ares, 2018). Ensuring questions and scale anchors are translated accurately and equivalently across languages is a significant issue, which if done incorrectly, can compromise the integrity of the research (Ares, 2018). These challenges do not only apply to research done in different countries; because of the growing diverse populations within a country, it should not be assumed that all participants speak the same language or ascribe to the same culture. For example, the US has no official language, and although English is the most common, the 2010 Census estimated that 9 percent of the population (over the age of 5) spoke English "less than very well" (Pandya, McHugh, & Batalova, 2011). When it comes to cross-cultural emotional work, the difficulty can increase because many emotion words do not have direct translations (Ares, 2018). In this context, non-verbal methods would be useful as they decrease the need for translation and can be visually interpreted in a similar manner across countries. Toet et al. (2018) and Kaneko et al. (2018) have recently developed a grid-type, emoji-based scale called EmojiGrid. The method is intended to measure consumers' emotional response to food products and has been deemed suitable for use by the researchers (Toet et al., 2018; Kaneko et al., 2018). The EmojiGrid measures both emotional valence and arousal (Toet et al., 2018; Kaneko et al., 2018); however, research by Schouteten et al. (2018b) suggests that valence may explain a much greater portion of the emotional response than arousal.

The present research is in continuation of the work by Swaney-Stueve, Jepsen, and Deubler (2018) and the work discusses in Chapter III on the K-State emoji scale. The scale has been validated with children in the US and China for evaluating verbal and tasted stimuli; further discussion on the development and previous validation of the scale can be found in the previous

publication and Chapter III (Swaney-Stueve et al., 2018). The K-State emoji scale showed equivalent ability to discriminate as the Peryam and Kroll (P&K) (super good/super bad) scale and was deemed suitable for measuring children's emotional response to verbal stimuli and tasted products. The intent of the research discussed in this paper was to validate the K-State emoji scale with adults in the US and China. It was hypothesized that the results would be congruent with those described by Swaney-Stueve et al. (2018) and Chapter III in that the K-State emoji scale would perform comparably to more traditional 9-point hedonic methods and be suitable for this older demographic.

Materials and Methods

The following US-based research involving human subjects was approved by Kansas State's Institutional Review Board (IRB #5930). Research involving human subjects conducted in China was overseen by International Flavors and Fragrances, Inc.

Scales

The scales used in this research are presented in Table 4-1 and Figure 4-1. The traditional 9-point hedonic scale used in the US was translated into Mandarin by research partners in China who were native speakers. A "team approach" was taken to complete translation as recommended by Slater and Yani-de-Soriano (2010). The K-State emoji scale was created and validated with children in the US and China by Kansas State University, Olathe, Kansas as discussed in Chapter III; the research described here was conducted concurrently with that study.

Table 4-1: 9-point Hedonic Scale

English	Chinese
Dislike extremely	极其不喜欢
Dislike very much	非常不喜欢
Dislike moderately	中等不喜欢
Dislike slightly	略不喜欢

Neither like nor dislike	没有喜欢也没有不喜欢
Like slightly	略喜欢
Like moderately	中等喜欢
Like very much	非常喜欢
Like extremely	极其喜欢

Figure 4-1: **K-State emoji scale**

Prior to evaluating the first sample with the K-State emoji scale, participants were instructed to "Look at the faces and click the face that matches how the sample makes you feel." When the sample was presented and participants were asked to answer using the K-State emoji scale, the following wording was used: "Overall, how do these salt and vinegar potato chips make you feel?". When the 9-point hedonic scale was used to evaluate the samples, the question was worded as follows: "Overall, how much do you like or dislike these salt and vinegar potato chips?". For both question types, the flavor name was changed per sample.

Participants

One hundred and one adults between the ages of 18 to 45 were recruited in Shanghai, China by Vantage Market Research (VMR) (Guangzhou, China); approximately equal numbers of males and females were selected (Table 4-2). In the US, 94 and 104 participants between the ages of 18-65 were recruited for experiments 1 and 2, respectively, by the Sensory and Consumer Research Center (SCRC) at Kansas State University, Olathe, Kansas (Table 4-2). A majority of the qualifying participants recruited for both experiment 1 and 2 in the US were female (Table 4-2). Consumers in both countries were recruited if they fell under the criteria of having no food allergies, were within the desired age range, and were flavored potato chip consumers (consume

at least biweekly). All participants were given monetary compensation for completing the evaluations.

Table 4-2: Demographics

	Exp. 1		Exp. 2
	China	**US**	**US**
Female	49%	70%	77%
Male	51%	30%	23%
18-24 years old	24%	14%	4%
25-34 years old	41%	38%	23%
35-45 years old	36%	16%	38%
Over 45 years old	0%	32%	36%

Experiment 1

The methods in this experiment were adapted from those used in the research with children discussed in Chapter III. Participants were given five different flavored potato chip samples to evaluate with a traditional 9-point hedonic scale and the K-State emoji scale, respectively. The samples were served on white paper plates labeled with randomized three-digit codes. The flavors were chosen by researchers in each country for their relevance and to evoke a range of reactions from generally well-liked to more polarizing flavors (Table 4-3). All potato chips were Lay's brand (Frito-Lay Inc., Plano, TX) and were purchased at local grocers.

Table 4-3: Flavored Potato Chips

Exp. 1 & 2, US	Exp. 1, China
Sour cream and onion	BBQ
Cheddar and sour cream	Tomato
Sweet southern heat barbecue	Seaweed
Dill pickle	Cheese
Salt and vinegar	Spicy

In China, the test was administered to participants by an interviewer. The interviewer read the questions to the participant, recorded their answers on a tablet, and verified the participant received and consumed the correct samples. Participants in the US completed the test

independently, recording their responses on a tablet. After the tasted evaluation, participants were asked to answer several questions regarding their technology use.

Experiment 2

Experiment 2 was conducted in a similar manner to experiment 1 by the SCRC in the US only. First, participants were given the 7 emoji that make up the scale in a randomized order and were tasked with sequencing them from the most positive to the most negative response. Next, using the K-State emoji scale, the participants were asked to evaluate the five flavored potato chips evaluated in experiment 1. Finally, the participants were asked questions about their technology and emoji use, as in experiment 1.

Data and Statistical Analysis

Results from experiments 1 and 2 were analyzed by analysis of variance (ANOVA) with a Tukey's HSD adjustment. The 9-point scale scores and K-State emoji scale scores from experiment 1 were related with correlation coefficients analyzed by Pearson's correlation. All statistical analysis was performed using JMP 13 (SAS Institute Inc., Cary, NC, USA) at the 0.05 significance level. The questionnaire was fielded and data collected using Compusense Cloud (Compusense, Inc., Guelph, Ontario, Canada).

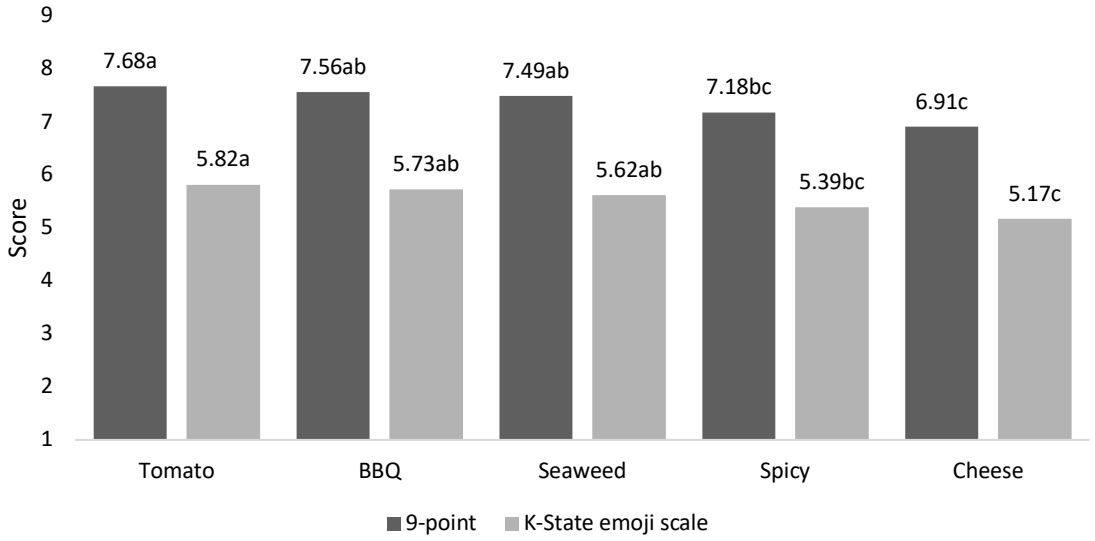
Results

Experiment 1

The mean liking and emotion scores for the tasted flavored potato chips are presented in Figures 4-2 and 4-3. In China, the 9-point hedonic scale and K-State emoji scale demonstrated equal abilities to discriminate across stimuli; the letter designation patterns assigned by Tukey's HSD followed an identical pattern for the liking and emotional response results. In the US, the 9-point hedonic scale was slightly more discriminating than the K-State emoji scale as made evident by

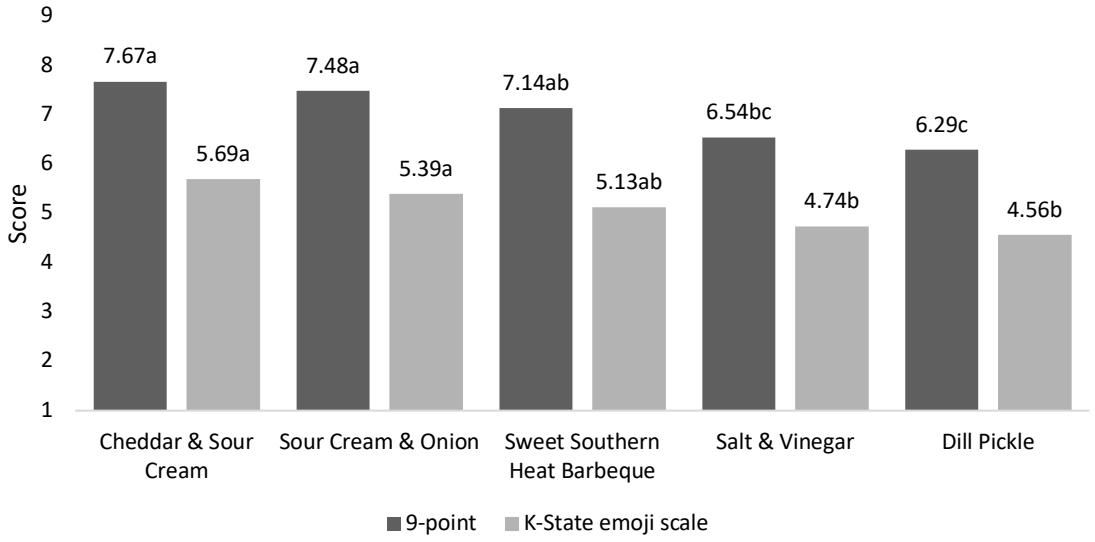
the Tukey's HSD letter designations. The scores from each scale were highly correlated (R^2 = >0.9) in both countries. The score distributions for the US and China, presented in Figures 4-4 to 4-7, show similar patterns with well-liked samples corresponding to positive emoji and more polarizing samples having a mix of negative and positive emoji. This also demonstrated that participants utilized all points on the scales.

Figure 4-2: Exp. 1 – Chip Liking and Emotional Response, China



*Means in the same row with the same letter designation are not statistically different at $p < 0.05$ according to pairwise comparison with Tukey's HSD.
**Liking scores are based on a 9-point scale. Emoji scores are based on a 7-point scale.

Figure 4-3: Exp. 1 – Chip Liking and Emotional Response, US



*Means in the same row with the same letter designation are not statistically different at $p < 0.05$ according to pairwise comparison with Tukey's HSD.
**Liking scores are based on a 9-point scale. Emoji scores are based on a 7-point scale.

Figure 4-4: Exp. 1 – China Liking Score Distributions for Most-, Mid-, and Least-Liked Flavor

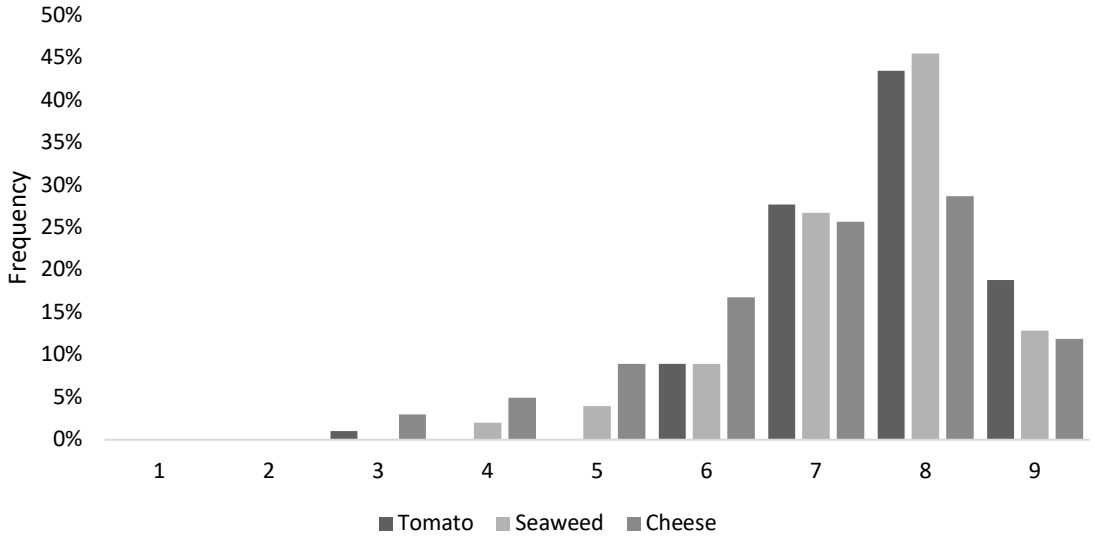


Figure 4-5: Exp. 1 – China Emoji Score Distributions for Most-, Mid-, and Least-Liked Flavor

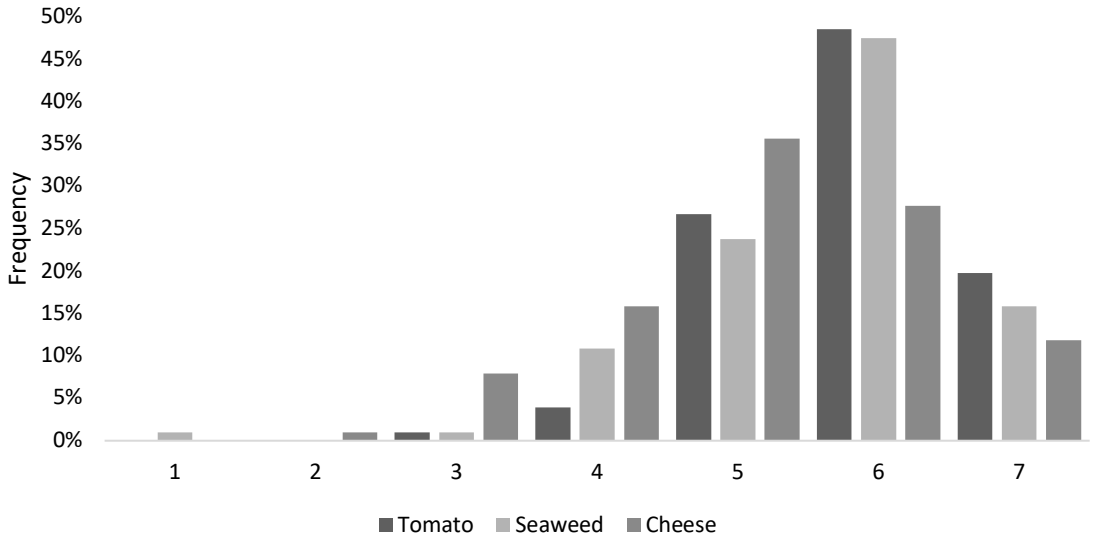


Figure 4-6: Exp. 1 – US Liking Score Distributions for Most-, Mid-, and Least-Liked Flavor

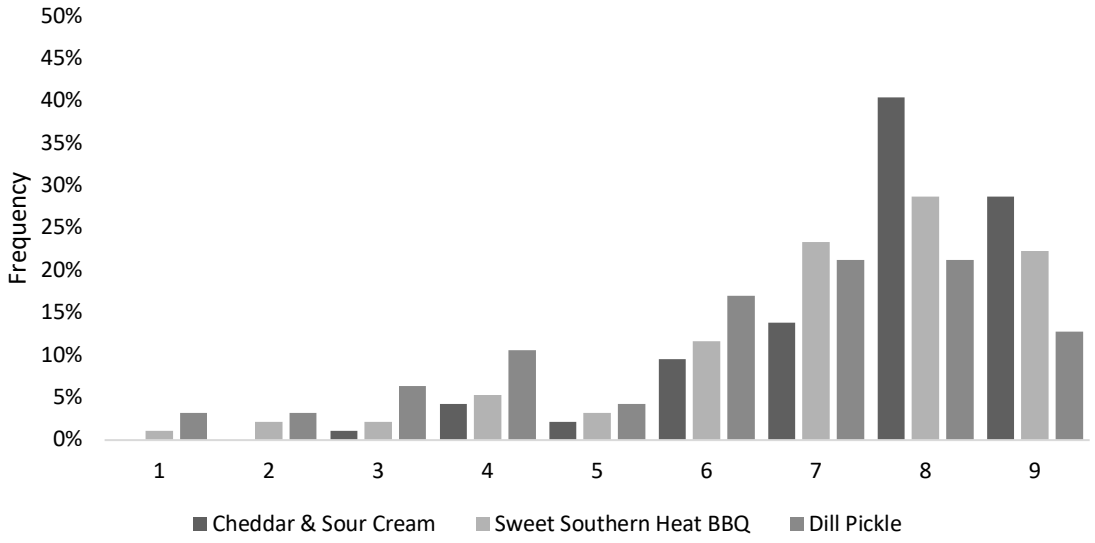
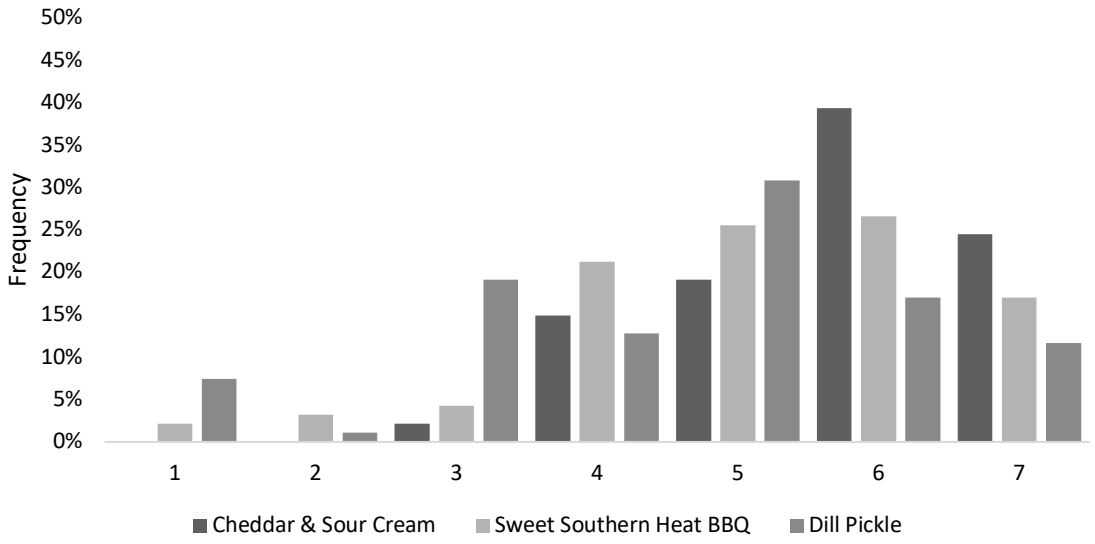


Figure 4-7: Exp. 1 – US Emoji Score Distributions for Most-, Mid-, and Least-Liked Flavor



Experiment 2

The results from the sequencing task are presented in Table 4-4. Participants sequenced the emoji in the intended order from positive to negative valence. All emoji points on the scale were statistically different from all other points.

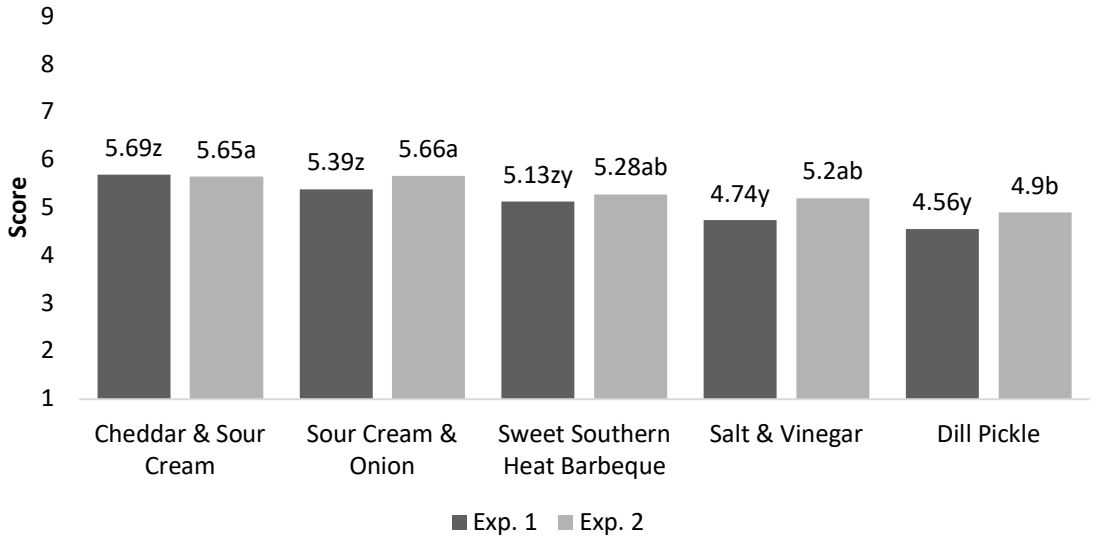
Table 4-4: Scale Sequencing - Mean Response

							
Mean Response	1.09g	2.08f	2.87e	4.21d	4.92c	6.22b	6.62a

Note: Means with the same letter designation are not statistically different at $P < 0.05$

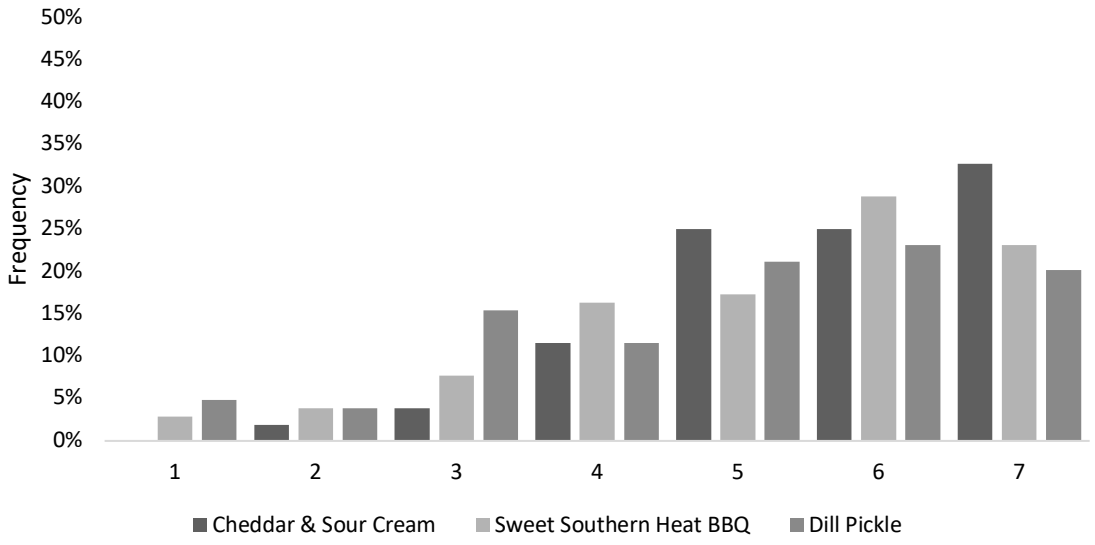
Mean scores for the five flavored potato chips evaluated using the K-State emoji scale are presented in Figure 4-8. The scale showed similar discrimination across the samples based on the Tukey's HSD letter designations and the discrimination pattern is similar to that in Figure 4-3. The score distributions are presented in Figures 4-9. As in experiment 1, typically well-liked samples were assigned positive emoji scores, while polarizing samples received a mix of positive and negative emoji scores. All points in the K-State emoji scale were utilized by participants.

Figure 4-8: Exp. 1 & Exp. 2 – Chip Emotional Response from K-State emoji scale, US



*Means in the same row with the same letter designation are not statistically different at $p < 0.05$ according to pairwise comparison with Tukey's HSD.
**Liking scores are based on a 9-point scale. Emoji scores are based on a 7-point scale.

Figure 4-9: Exp. 2 – US Emoji Score Distributions for Most-, Mid-, and Least-Liked Flavor



Smartphone and Emoji Usage

The majority of participants in both countries own smartphones (Figure 4-10). In China, the largest portion of participants expressed that they most often use their smartphone for social media (Figure 4-11). In the US, participants said they most frequently use their smartphone for

communicating with friends and family via text (Figure 4-11). When asked whether they used emoji, the majority of participants answered "yes" (Figure 4-12). Of those who answered "yes", a larger percentage of Chinese participants stated that they use emoji very often, or at least once a day, compared to US participants (Figure 4-13).

Figure 4-10: Smart Phone Ownership

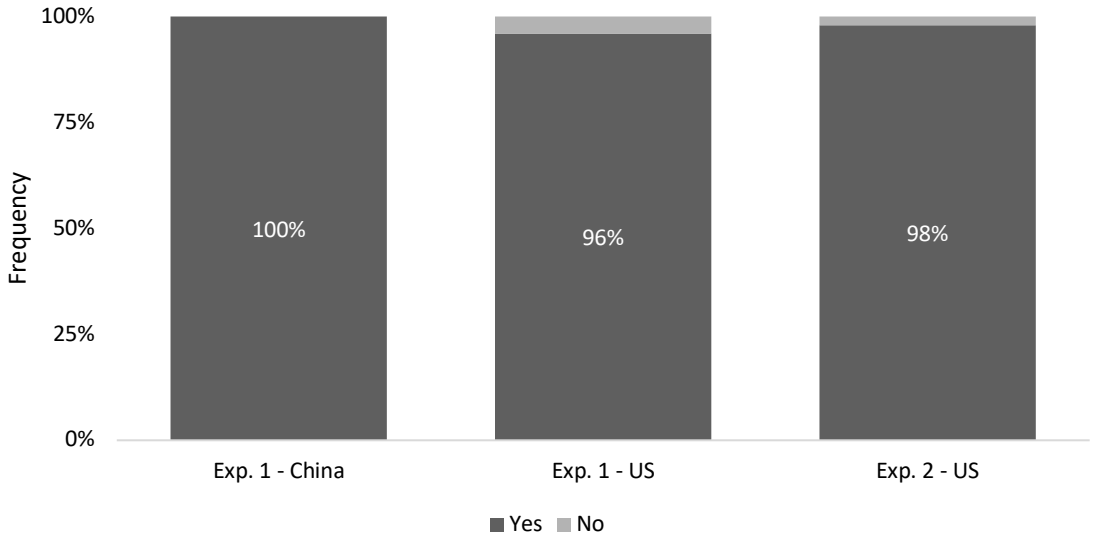


Figure 4-11: Smartphone Usage

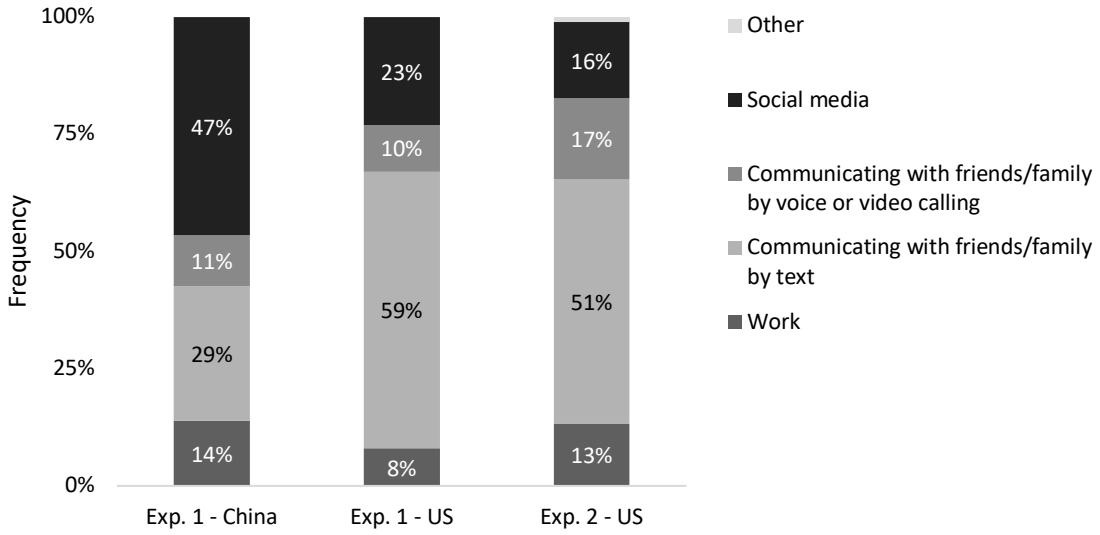


Figure 4-12: Emoji Usage

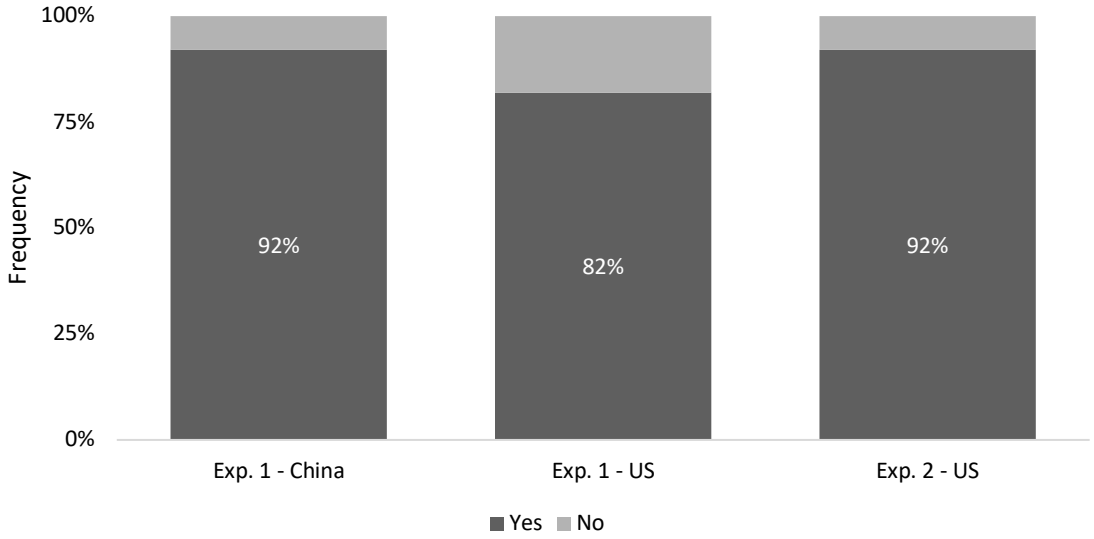
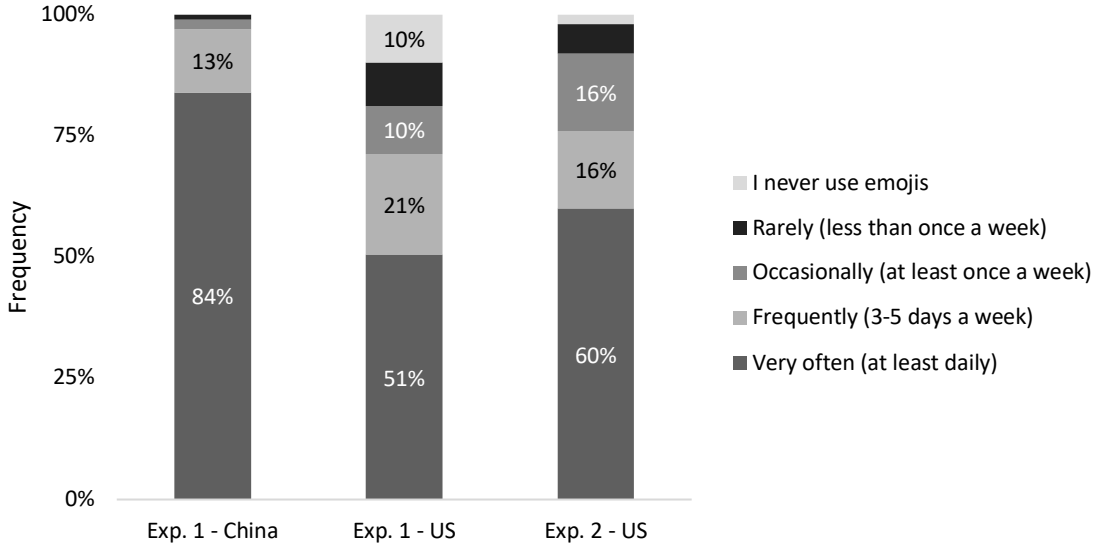


Figure 4-13: Emoji Use Frequency



Scale Appropriateness

After completing the tasting questionnaire, participants were asked how appropriate they felt the 9-point hedonic scale and the K-State emoji scale, respectively, were for the evaluation task. Over 90% of respondents thought the 9-point hedonic scale was “Appropriate” or “Very Appropriate” for evaluating the chip samples (Figure 4-14). When asked the appropriateness of the K-State emoji scale, 99% of Chinese respondents felt it was “Appropriate” or “Very

Appropriate", while only 78% of US respondents from both experiment 1 and 2 felt it was "Appropriate" or "Very Appropriate" (Figure 4-15).

Figure 4-14: Exp. 1 – 9-point Hedonic Scale Appropriateness

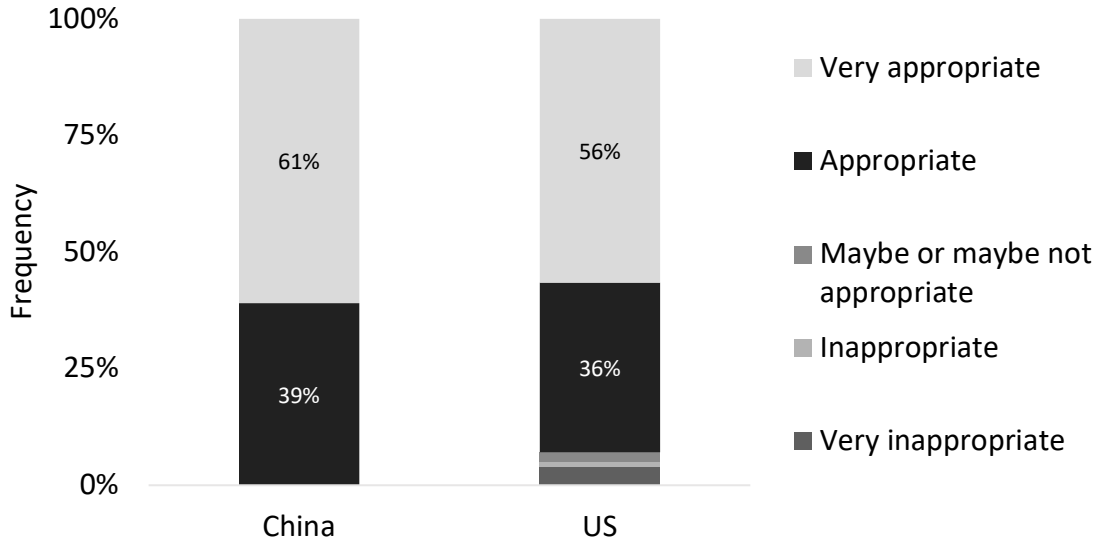
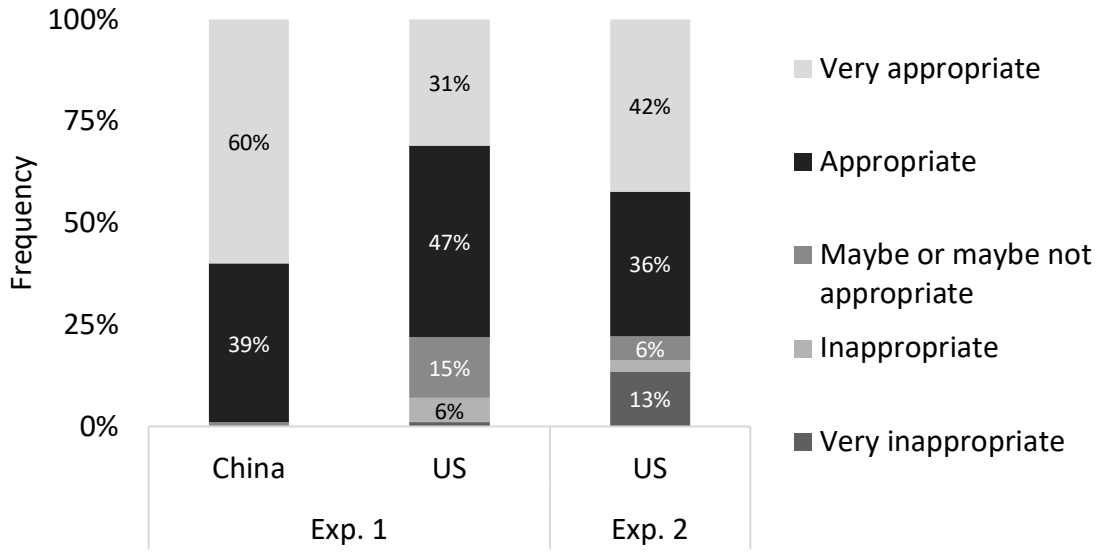


Figure 4-15: Exp. 1 & 2 – K-State emoji scale Appropriateness



Discussion

Experiment 1

The studies carried out in the US and China used different, yet equivalent, research methods (Buil, Chernatony, & Martinez, 2012). As summarized by Buil et al. (2012), different countries

have different needs; using identical methods is not essential, though methods should be equivalent in nature. Interviewers are commonly used in China, so consumers are comfortable interacting with them with this testing format. The interviewers in this study were agents from the region which contributed to building trust with the consumers (Buil et al., 2012).

Since the K-State emoji scale was able to discriminate across stimuli in China, and the scores were highly correlated to those from the 9-point hedonic scale, it was demonstrated to be an effective and suitable method for measuring consumers' emotional responses to food products. Additionally, due to the high correlation, the K-State emoji scale has the potential to be used as an alternative to more traditional hedonic scales. Emoji offer the benefit of being visual and requiring no translation - they are a simple medium that could be used in cross-cultural research. Due to the slight decrease in discrimination when compared to the 9-point hedonic scale in the US, the K-State emoji scale is hypothesized to be less applicable for adults in the US than with kids. However, the results still showed the potential of the K-State emoji scale and future studies will explore how adults of different ages may interact with the scale differently.

The similar patterns in the liking and emoji scale score distributions demonstrate that participants understand the intended valence of the K-State emoji scale. Overall, the liking and emotion scores trended positively. This is, in part, because flavored potato chip consumers were specifically recruited for this study, so they are likely to enjoy most of the samples.

Experiment 2

The purpose of the sequencing task was to determine if agreement could be reached on the ordering of the scale. The participants in experiment 2 sequenced the emoji in the intended order from positive to negative valence. These results are in accordance with the findings discussed in Chapter III. Each mean response in the sequencing task was statistically different from all others

suggesting that the respondents assign distinct meaning to each emoji. These results help validate the use of the K-State emoji scale with adults.

When comparing the mean emotional response scores, a significant difference was found between experiment 1 and 2. The methods used in experiment 1, namely that participants saw both a 9-point hedonic scale and the K-State emoji scale, led to a slightly higher degree of discrimination across flavored potato chip samples ($p=<0.0001$ vs. $p=0.0003$). It is hypothesized that the bias induced by having been used side-by-side with a hedonic scale in experiment 1 led to the increased differentiation. However, the K-State emoji scale in experiment 2 showed a nearly identical discrimination pattern to experiment 1 when the Tukey's HSD letter designations are examined; this supports the effectiveness of the scale when used on its own. As shown in the score distribution figures, the emotion scores followed expected patterns of valence, similar to the results in experiment 1. Participants used all points of the scale when the K-State emoji scale is used on its own, demonstrating that respondents exhibited no bias towards any one emoji in the scale. This experiment was significant as it demonstrates the K-State emoji scale can be used on its own and is still suitable for measuring emotional response and product acceptance of tasted stimuli.

Smartphone and Emoji Usage & Scale Appropriateness

The high percentage of smartphone owners and emoji users aids in demonstrating the ubiquitous nature of emoji in today's developed world. In China, the majority of participants – 84% – reported using emoji every day while only 51% and 60% of US adults in experiments 1 and 2 reported daily use of emoji. More frequent use of emoji may have made the Chinese participants more comfortable with the scale anchors than the US participants. Additionally, the Chinese participants were more accepting of the emoji-based scale and felt that the K-State emoji scale

was an appropriate method for the task of evaluating the flavored potato chips. While the majority of US participants also felt the emoji scale was appropriate for the task, a larger percentage responded that the scale was “Inappropriate” or “Very Inappropriate”. This may be due to cultural or country-based differences in emoji use (Lu et al., Sep 12, 2016). Lu et al. reported significant differences in emoji usage across 212 countries (2016). Notably, the data was shown to cluster into two large groups; one cluster contained mostly developed countries while the other contained mostly developing nations (Lu et al., 2016). Though the US and China are both developed countries, their vastly different cultures likely contribute to the distinctions seen in this research. Another hypothesis for this difference is that adults in the US view emoji as childish and use them less frequently than adults in China who are more accepting of emoji as a method of communication. This may be attributed in part to the birthplace of emoji – Japan – being geographically close to China, leading to earlier adoption and acceptance of emoji compared to the US (Kaye, Malone, & Wall, 2016).

Conclusion

The authors recognize limitations of the research. The data was collected in the US and China; these results cannot be assumed to be applicable globally, however, they offer a good indication of the suitability of the scale. Also, a limited age range was recruited. It is unclear whether the scale would be fitting for research with older populations. Future research will continue to explore the K-State emoji scale’s application with other demographics.

Participants in both countries used the K-State emoji scale in a similar manner. When tested in the US, participants understood the intended sequence of the emoji in the scale and the differentiation of each scale point indicated the emoji had distinct meanings to the respondents. Though the scale saw moderately better acceptance by adults in China, this research validates

that the K-State emoji scale is suitable for measuring adult consumer's emotional response to food products in both countries. The K-State emoji scale is a promising method offering a non-verbal scale alternative for measuring emotional response and product acceptance with the potential to be used across age groups globally.

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Chapter V – *Summary*

As the global economy continues to grow and change, children have become a crucial demographic of interest. Due to variability in development and comprehension, many of the available consumer research methods, specifically for measuring emotions, are not suitable for children. Additionally, globalization has led to an increased need for suitable consumer methods that address the needs and challenges of conducting research across cultures. One major challenge researchers face is translation; it can be difficult to ensure high-quality translations, and some verbiage may not have a direct translation for every language needed. The purpose of this research was to develop an emoji-based scale for measuring consumers' emotional response and validate the scale with different populations. These objectives were met through the use of multiple quantitative consumer surveys, both online and in person, in the United States and China.

The K-State emoji scale has been found to offer a new method for measuring the emotional response of kids (ages 8-11) and adults to consumer products. The scale is visual, intuitive, and suitable for many age groups. Further, it may be easier to use and less taxing to participants. Both children and adults in the US and China were able to sequence the emoji in the intended order supporting that the meanings of the emoji on the scale is fairly ubiquitous across age and cultures. The method is discriminative and has been validated with both written stimuli and tasted stimuli.

Future research will focus on continued validating the scale with other age groups, countries, and cultures, as well as more product categories. Additionally, more research where the K-State emoji scale is used on its own (not with a 9-point hedonic scale) should be performed to support the scale's functionality when used alone. These further learnings would add to the available

knowledge on emoji in research which could be applied to other methods, like check-all-that-apply, and industries, such as healthcare.

To conclude, the K-State emoji scale is an acceptable method offering global application opportunities. It can be used as an alternative to more traditional hedonic methods and does not require scale translation. In this globalized, digital age, the K-State emoji scale provides a modernized facial scale for the 21st century.

Appendix

Screeners and questionnaires used in this research are compiled below in the following order:

- Apple Emoji Scale – USA, Child Questionnaire
- Phase 1 – USA, Scale A Questionnaire
- Phase 1 – USA, Scale B Questionnaire
- Phase 1 – China, Scale A Questionnaire
- Phase 1 – China, Scale B Questionnaire
- Phase 2 – USA, Child Screener
- Phase 2 – USA, Child Questionnaire
- Phase 2 – China, Child Questionnaire
- Experiment 1 – USA, Adult Screener
- Experiment 1 – USA, Adult Questionnaire
- Experiment 1 – China, Adult Questionnaire
- Experiment 2 – USA, Adult Screener
- Experiment 2 – USA, Adult Questionnaire

Apple Emoji Scale - USA, Child Questionnaire

Welcome!

Click the *next* button to begin

Please answer the following questions about yourself.

Are you male or female?

- Male
- Female

Which of the following best describes your age?

- 9 years or younger
- 10-17 years
- 18-24 years
- 25-34 years
- 35-44 years
- 45-54 years
- 55-64 years
- 65-74 years
- 75 years and older

Do you currently have any children residing in your household between the ages of 2 and 18 years?

- Yes
- No

Which of the following electronic devices do you use regularly? (choose all that apply)

- [ ] iPad or tablet ???
- [ ] Desktop computer ???
- [ ] Laptop computer ???
- [ ] Smart phone ???
- [ ] None of the above

Answer the following questions using the scale provided.
SCROLL DOWN to see all questions.

How much do you like or dislike going to the dentist?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike cleaning your house/home?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike baking cookies?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike reading a book?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike going out to dinner?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike going to a museum?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike having a stomach ache?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike watching television?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike going on vacation?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

Answer the following questions using the scale provided.
SCROLL DOWN to see all questions.

How much do you like or dislike cheese pizza?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike pepperoni pizza?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike taco pizza?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike chicken alfredo pizza?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike mushroom & onion pizza?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike sausage pizza?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

How much do you like or dislike buffalo chicken pizza?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

Look at the faces and click on the face that matches how the activity makes you feel.
SCROLL DOWN to see all questions.

How does going to the dentist make you feel?

How does cleaning your house/home make you feel?

How does baking cookies make you feel?

How does reading a book make you feel?

How does going out to dinner make you feel?

How does going to a museum make you feel?

How does getting a stomach ache make you feel?

How does watching television make you feel?

How does going on vacation make you feel?

Look at the faces and click on the face that matches how the pizza flavor makes you feel. SCROLL DOWN to see all questions.

How does cheese pizza make you feel?

How does pepperoni pizza make you feel?

How does taco pizza make you feel?

How does chicken alfredo pizza make you feel?

How does mushroom and onion pizza make you feel?

How does sausage pizza make you feel?

How does buffalo chicken pizza make you feel?

Thank you for completing this survey!

Finished

Phase 1 - USA, Scale A Questionnaire

Welcome!

Click the *next* button to begin

Please answer the following questions about yourself until instructed otherwise.

Are you male or female?

- Male
- Female

Which of the following best describes your age?

- 17 years or younger
- 18-24 years
- 25-34 years
- 35-44 years
- 45-54 years
- 55-64 years
- 65 years or above

Which number range best describes your total annual household income before taxes?

- ○ Under $25,000
- ○ $25,000 - $34,999
- ○ $35,000 - $49,999
- ○ $50,000 - $59,999
- ○ $60,000 - $69,999
- ○ $70,000 - $99,999
- ○ $100,000 - $149,999
- ○ $150,000 or more
- ○ I prefer not to answer

Do you currently have any children residing in your household?

- ○ Yes
- ○ No

Are you, yourself, the parent or legal guardian of the children residing in your household?

- ○ Yes
- ○ No

How many children in your household are currently enrolled in elementary school?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ None

In which type of school are your children currently enrolled?

- ○ Public School ???
- ○ Private School ???
- ○ Home School ???

Which grade(s) in school are your child/children currently attending? (choose all that apply)

- ☐ Kindergarten
- ☐ First
- ☐ Second
- ☐ Third
- ☐ Fourth
- ☐ Fifth
- ☐ None of the above

How many children in your household are currently enrolled in Third, Fourth or Fifth grade?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ None

You have indicated you have more than one child in 3rd, 4th or 5th grade. For this online survey, only one child per household from 3rd, 4th, or 5th grade will be eligible to participate.

Knowing this, are you willing to continue this survey for just one child?

- ○ Yes
- ○ No

Please answer the following questions about your **3rd, 4th, or 5th grade child**.

What is your child's gender?

- ○ Male
- ○ Female

What is your child's name?

The following questions are about your child's behavior towards food. Please indicate how much you agree or disagree with each statement.

	Disagree strongly	Disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Agree	Agree strongly
My child is constantly sampling new and different foods.							
My child doesn't trust new foods.							
If my child doesn't know what is in a food, he/she won't try it.							

My child likes food from different countries.							
To my child, ethnic food looks too weird to eat.							

The following questions are about your child's behavior towards food. Please indicate how much you agree or disagree with each statement.

	Disagree strongly	Disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Agree	Agree strongly
At parties, my child will try new foods.							
My child is afraid to eat things he/she knows he/she has never had before.							
My child is very particular about the foods he/she will eat.							
My child will eat almost anything.							
My child likes to try new ethnic restaurants.							

Based on your responses, ${WILDCARD1} has qualified for an online survey on kids and their reactions to different foods and situations.

- This online survey will take aproximately 12 minutes for ${WILDCARD1} to complete.
- All parent/child pairs will be entered to win one of 2 $50 Visa gift cards
- If your name is drawn a member of the Sensory & Consumer Research Center team will contact you via phone or email.
- You will have access to the child portion of the survey until Tuesday, November 7th.

Are you willing to allow ${WILDCARD1} to take this online survey based on the above information?

- ○ Yes
- ○ No

Would you consent to being contacted in the future to set up an interview with your child regarding the results of this study?

- ○ Yes, I can be contacted at a later date and would allow my child to be interviewed.
- ○ No, I do not want to be contacted after this study.

If ${WILDCARD1} is with you and available right now to complete the 12 minute online survey please click *NEXT*.

If ${WILDCARD1} is unavailable right now please close your browser and log back in when he/she is available.

You will be able to access this survey until Wednesday, November 1st.

Hello ${WILDCARD1}!

Please read the statements below.

1. I agree to participate in this online survey.

2. I know I will be entered for a chance to win a gift card.

3. No one will use my name as part of this test.

4. I know that I do not have to finish this survey if I do not want to finish.

I am typing my name because I have read and agree to the 4 statements above.

What grade are you in?

- 3rd Grade
- 4th Grade
- 5th Grade
- None of the above

Please indicate how much you agree or disagree with each statement.

	Totally disagree	Disagree	Disagree a little	Maybe agree or maybe disagree	Agree a little	Agree	Totally agree
I like to try new and different foods.							
I don't trust new foods.							
If I don't know what is in a food, I won't try it.							

I like food from different countries.							
Foods from other countries look too weird to eat.							

Please indicate how much you agree or disagree with each statement.

	Totally disagree	Disagree	Disagree a little	Maybe agree or maybe disagree	Agree a little	Agree	Totally agree
I will try new foods at a friends house.							
I am afraid to eat things I have never had before.							
I am very particular about the foods I will eat.							
I will eat almost anything.							
I like to try new restaurants with foods from other countries.							

If you are viewing this screen, your child did not qualify for this particular study.

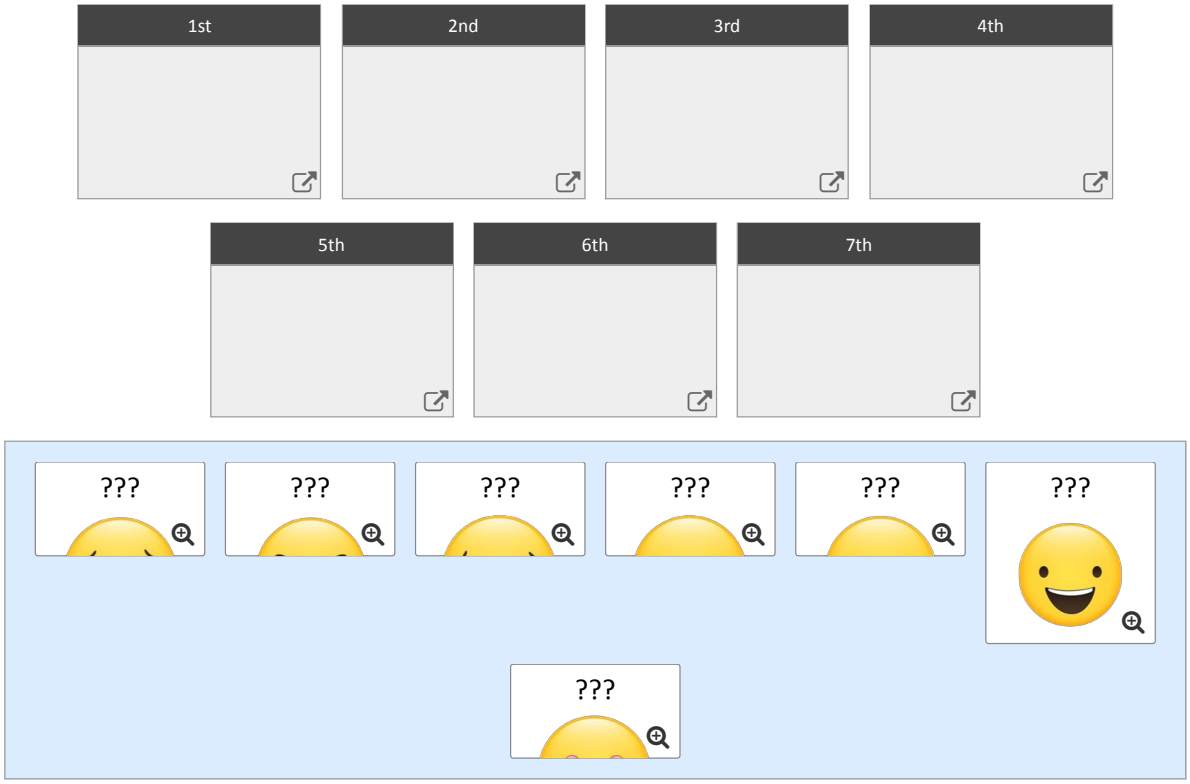
We look forward to your participation in future studies.

Thank you for completing this survey!

Look at the emojis below to answer the following question.

Please sort the emojis in order from the best feeling, most positive emoji to the worst feeling, most negative emoji. Drag and drop the emojis into the numbered boxes.

(1st=Best Feeling, 7th=Worst Feeling)



How would you describe going to the dentist? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe cleaning your room? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe baking cookies? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe reading a book? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe going on a picnic? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe going to a museum? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe getting a stomach ache? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe playing with sidewalk chalk? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe going on a field trip? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe cheese pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe pepperoni pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe taco pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe chicken alfredo pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe mushroom and onion pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe sausage pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe buffalo chicken pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

Look at the faces and click on the face that matches how the activity makes you feel.

How does going to the dentist make you feel? (Choose one face)

How does cleaning your room make you feel? (Choose one face)

How does baking cookies make you feel? (Choose one face)

How does reading a book make you feel? (Choose one face)

How does going on a picnic make you feel? (Choose one face)

How does going to a museum make you feel? (Choose one face)

How does getting a stomach ache make you feel? (Choose one face)

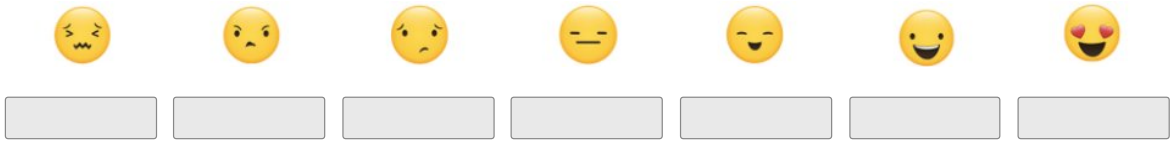
How does playing with sidewalk chalk make you feel? (Choose one face)

How does going on a fieldtrip at school make you feel? (Choose one face)

Look at the faces and click on the face that matches how the flavor of pizza makes you feel.

How does cheese pizza make you feel? (Choose one face)

How does pepperoni pizza make you feel? (Choose one face)



How does taco pizza make you feel? (Choose one face)

How does chicken alfredo pizza make you feel? (Choose one face)

How does mushroom and onion pizza make you feel? (Choose one face)

How does sausage pizza make you feel? (Choose one face)

How does buffalo chicken pizza make you feel? (Choose one face)

Sensory and Consumer Research Center

Thank you for completing this survey!

Together you and your parent will be entered to win one of two $50 Visa gift cards.

If your names are drawn a member of the Sensory & Consumer Research Center will contact you via phone or email.

Sensory and Consumer Research Center

Thank you for completing this survey!

Finished

Phase 1 - USA, Scale B Questionnaire

Welcome!

Click the *next* button to begin

Please answer the following questions about yourself until instructed otherwise.

Are you male or female?

- Male
- Female

Which of the following best describes your age?

- 17 years or younger
- 18-24 years
- 25-34 years
- 35-44 years
- 45-54 years
- 55-64 years
- 65 years or above

Which number range best describes your total annual household income before taxes?

- Under $25,000
- $25,000 - $34,999
- $35,000 - $49,999
- $50,000 - $59,999
- $60,000 - $69,999
- $70,000 - $99,999
- $100,000 - $149,999
- $150,000 or more
- I prefer not to answer

Do you currently have any children residing in your household?

- Yes
- No

Are you, yourself, the parent or legal guardian of the children residing in your household?

- Yes
- No

How many children in your household are currently enrolled in elementary school?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ None

In which type of school are your children currently enrolled?

- ○ Public School ???
- ○ Private School ???
- ○ Home School ???

Which grade(s) in school are your child/children currently attending? (choose all that apply)

- ☐ Kindergarten
- ☐ First
- ☐ Second
- ☐ Third
- ☐ Fourth
- ☐ Fifth
- ☐ None of the above

How many children in your household are currently enrolled in Third, Fourth or Fifth grade?

- 1
- 2
- 3
- 4
- None

You have indicated you have more than one child in 3rd, 4th or 5th grade. For this online survey, only one child per household from 3rd, 4th, or 5th grade will be eligible to participate.

Knowing this, are you willing to continue this survey for just one child?

- Yes
- No

Please answer the following questions about your **3rd, 4th, or 5th grade child**.

What is your child's gender?

- Male
- Female

What is your child's name?

The following questions are about your child's behavior towards food. Please indicate how much you agree or disagree with each statement.

	Disagree strongly	Disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Agree	Agree strongly
My child is constantly sampling new and different foods.							
My child doesn't trust new foods.							
If my child doesn't know what is in a food, he/she won't try it.							

My child likes food from different countries.							
To my child, ethnic food looks too weird to eat.							

The following questions are about your child's behavior towards food. Please indicate how much you agree or disagree with each statement.

	Disagree strongly	Disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Agree	Agree strongly
At parties, my child will try new foods.							
My child is afraid to eat things he/she knows he/she has never had before.							
My child is very particular about the foods he/she will eat.							
My child will eat almost anything.							
My child likes to try new ethnic restaurants.							

Based on your responses, ${WILDCARD1} has qualified for an online survey on kids and their reactions to different foods and situations.

- This online survey will take aproximately 12 minutes for ${WILDCARD1} to complete.
- All parent/child pairs will be entered to win a $50 Visa gift cards
- If your name is drawn a member of the Sensory & Consumer Research Center team will contact you via phone or email.
- You will have access to the child portion of the survey until Friday, December 22nd.

Are you willing to allow ${WILDCARD1} to take this online survey based on the above information?

- ○ Yes
- ○ No

Would you consent to being contacted in the future to set up an interview with your child regarding the results of this study?

- ○ Yes, I can be contacted at a later date and would allow my child to be interviewed.
- ○ No, I do not want to be contacted after this study.

If ${WILDCARD1} is with you and available right now to complete the 12 minute online survey please click *NEXT*.

If ${WILDCARD1} is unavailable right now please close your browser and log back in when he/she is available.

You will be able to access this survey until Friday, December 22nd.

Hello ${WILDCARD1}!

Please read the statements below.

1. I agree to participate in this online survey.
2. I know I will be entered for a chance to win a gift card.
3. No one will use my name as part of this test.
4. I know that I do not have to finish this survey if I do not want to finish.

I am typing my name because I have read and agree to the 4 statements above.

What grade are you in?

- ○ 3rd Grade
- ○ 4th Grade
- ○ 5th Grade
- ○ None of the above

Please indicate how much you agree or disagree with each statement.

	Totally disagree	Disagree	Disagree a little	Maybe agree or maybe disagree	Agree a little	Agree	Totally agree
I like to try new and different foods.							
I don't trust new foods.							
If I don't know what is in a food, I won't try it.							
I like food from different countries.							
Foods from other countries look too weird to eat.							

Please indicate how much you agree or disagree with each statement.

	Totally disagree	Disagree	Disagree a little	Maybe agree or maybe disagree	Agree a little	Agree	Totally agree
I will try new foods at a friends house.							
I am afraid to eat things I have never had before.							
I am very particular about the foods I will eat.							
I will eat almost anything.							
I like to try new restaurants with foods from other countries.							

If you are viewing this screen, your child did not qualify for this particular study.

We look forward to your participation in future studies.

Thank you for completing this survey!

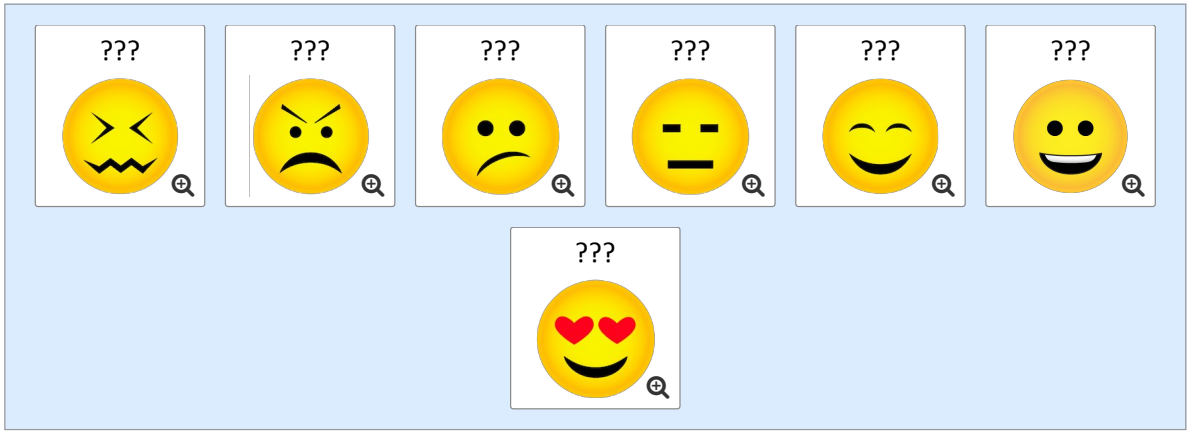
Look at the emojis below to answer the following question.

Please sort the emojis in order from the best feeling, most positive emoji to the worst feeling, most negative emoji.
Drag and drop the emojis into the numbered boxes.

(1st=Best Feeling, 7th=Worst Feeling)

1st	2nd	3rd	4th

5th	6th	7th



How would you describe going to the dentist? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe cleaning your room? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe baking cookies? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe reading a book? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe going on a picnic? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe going to a museum? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe getting a stomach ache? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe playing with sidewalk chalk? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe going on a field trip? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe cheese pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe pepperoni pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe taco pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe chicken alfredo pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe mushroom and onion pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe sausage pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

How would you describe buffalo chicken pizza? (Choose one)

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

Look at the faces and click on the face that matches how the activity makes you feel.

How does going to the dentist make you feel? (Choose one face)

How does cleaning your room make you feel? (Choose one face)

How does baking cookies make you feel? (Choose one face)

How does reading a book make you feel? (Choose one face)

How does going on a picnic make you feel? (Choose one face)

How does going to a museum make you feel? (Choose one face)

How does getting a stomach ache make you feel? (Choose one face)

How does playing with sidewalk chalk make you feel? (Choose one face)

How does going on a fieldtrip at school make you feel? (Choose one face)

Look at the faces and click on the face that matches how the flavor of pizza makes you feel.

How does cheese pizza make you feel? (Choose one face)

How does pepperoni pizza make you feel? (Choose one face)

How does taco pizza make you feel? (Choose one face)

How does chicken alfredo pizza make you feel? (Choose one face)

How does mushroom and onion pizza make you feel? (Choose one face)

How does sausage pizza make you feel? (Choose one face)

How does buffalo chicken pizza make you feel? (Choose one face)

Sensory and Consumer Research Center

Thank you for completing this survey!

Together you and your parent will be entered to win a $50 Visa gift cards.

If your names are drawn a member of the Sensory & Consumer Research Center will contact you via phone or email.

Sensory and Consumer Research Center

Thank you for completing this survey!


Finished

Phase 1 - China, Scale A Questionnaire

欢迎

请点击“**next**”按键开始测试

Welcome!

Click the *next* button to begin

Hello ${WILDCARD1}!你好！

Please read the statements below.请阅读下面的句子。

1. I agree to participate in this online survey.我同意参加本次在线调研

2. I know I will be compensated for my complete participation.我了解完成本次测试后会得到报酬。

3. No one will use my name as part of this test.没有人会将我的名字作为测试的一部分。

4. I know that I do not have to finish this survey if I do not want to finish.我了解我不是必须完成本次测试。

I am typing my name because I have read and agree to the 4 statements above. 我阅读了并且同意以上**4**点后录入我的名字

What is your gender?你的性别？

- Female 女
- Male 男

How old are you? 你的年龄是？

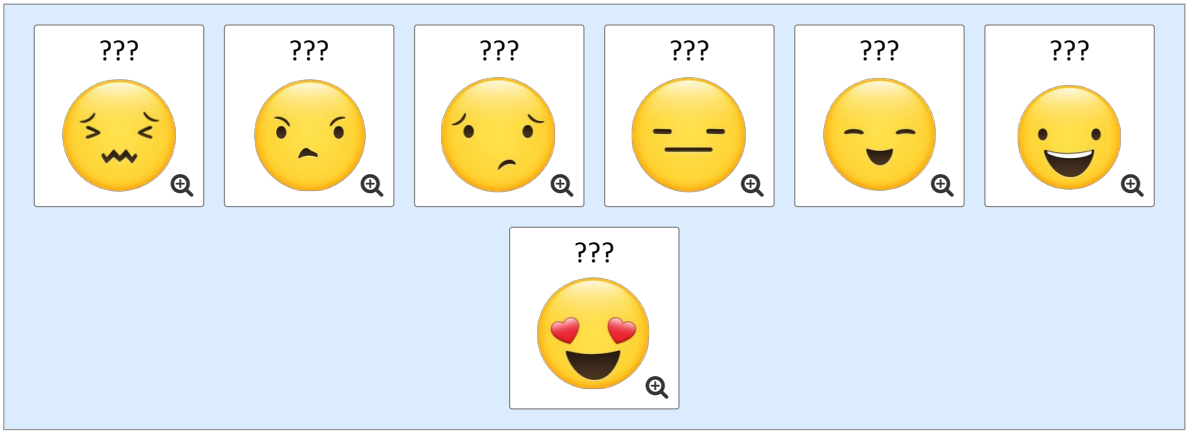
- 8 years old 8岁
- 9 years old 9岁
- 10 years old 10岁
- 11 years old 11岁
- None of the above 都不是

If you are viewing this screen, you did not qualify for this particular study.
如果您看到这个页面，表示您不符合测试的要求
We look forward to your participation in future studies.
希望您可以参加未来其他测试
Thank you for completing this survey!
感谢完成本次测试！

Look at the emojis below to answer the following question.
请看下面的表情包并回答问题
Please sort the emojis in order from the best feeling, most positive emoji to the worst feeling, most negative emoji.
Drag and drop the emojis into the numbered boxes.
请将表情包按照您觉得代表最好的感觉/最积极的感觉到最差/最消极的感觉分类。
请将表情拖到对应的数字框中
(1st=Best Feeling, 7th=Worst Feeling)
（第**1**个**=**最好的感觉，第**7**个**=**最差的感觉）

1st	2nd	3rd	4th

5th	6th	7th



看牙医时你的感觉是？（单选）

How would you describe going to the dentist? (Choose one)

Super bad 超级差	Really bad真的差	Bad差	Just a little bad 只是一点点差	Maybe good or maybe bad 不好也不差	Just a little good 只是一点点好	Good好	Really good 真的好	Super good 超级好

打扫房间时你的感觉是？

How would you describe cleaning your room? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

煮饭煮菜你的感觉是？（单选）

How would you describe cooking? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

读一本书时你的感觉是？（单选）

How would you describe reading a book? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

去公园玩你的感觉是？（单选）

How would you describe going to the park? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good 真的好	Super good 超级好

参观博物馆你的感觉是？（单选）

How would you describe going to a museum? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

肚子疼你的感觉是？（单选）

How would you describe getting a stomach ache? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

轮滑你的感觉是？（单选）

How would you describe roller skating? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

郊游时你的感觉是？（单选）

How would you describe going on a field trip? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容烧烤味薯片？（单选）

How would you describe BBQ potato chips? (Choose one)

Super bad 超级差	Really bad 真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容辣味薯片？（单选）

How would you describe spicy potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容番茄味薯片？（单选）

How would you describe tomato potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容黄瓜味薯片？（单选）
How would you describe cucumber potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good 超级好

你怎样形容奶酪味薯片？（单选）
How would you describe cheese potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good 真的好	Super good超级好

你怎样形容铁板鱿鱼味薯片？（单选）
How would you describe sizzling squid potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容海苔味薯片？（单选）
How would you describe seaweed potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

看牙医你的感觉是？（选择一种表情）

How does going to the dentist make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

打扫房间时你的感觉是？（选择一种表情）

How does cleaning your room make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

煮饭煮菜你的感觉是？（选择一种表情）

How does cooking make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

读一本书时你的感觉是？（选择一种表情）

How does reading a book make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

去公园玩你的感觉是？（选择一种表情）

How does going to the park make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

参观博物馆时你的感觉是？（选择一种表情）

How does going to a museum make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

肚子疼你的感觉是？（选择一种表情）

How does getting a stomach ache make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

轮滑你的感觉是？（选择一种表情）

How does roller skating make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

学校郊游时你的感觉是？（选择一种表情）

How does going on a fieldtrip at school make you feel? (Choose one face)

Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
烧烤味薯片给你带来的感觉是？（选择一种表情）

How does BBQ potato chips make you feel? (Choose one face)

Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
辣味薯片给你带来的感觉是？（选择一种表情）

How does spicy potato chips make you feel? (Choose one face)

Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
番茄味薯片给你带来的感觉是？（选择一种表情）

How does tomato potato chips make you feel? (Choose one face)

Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
黄瓜味薯片给你带来的感觉是？（选择一种表情）

How does cucumber potato chips make you feel? (Choose one face)

Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
奶酪味薯片给你带来的感觉是？（选择一种表情）

How does cheese potato chips make you feel? (Choose one face)

Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
铁板鱿鱼味薯片给你带来的感觉是？（选择一种表情）

How does sizzling squid potato chips make you feel? (Choose one face)

Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
海苔味薯片给你带来的感觉是？（选择一种表情）

How does seaweed potato chips make you feel? (Choose one face)

感谢您参加并完成本次测试！

Thank you for completing this survey!

感谢您参加并完成本次测试！

Thank you for completing this survey!

Finished

Phase 1 - China, Scale B Questionnaire

欢迎

请点击“**next**”按键开始测试

Welcome!

Click the *next* button to begin

Hello ${WILDCARD1}!你好！

Please read the statements below.请阅读下面的句子。

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3. No one will use my name as part of this test.没有人会将我的名字作为测试的一部分。

4. I know that I do not have to finish this survey if I do not want to finish.我了解我不是必须完成本次测试。

I am typing my name because I have read and agree to the 4 statements above. 我阅读了并且同意以上**4**点后录入我的名字

What is your gender? 你的性别是？

- Female女
- Male男

How old are you?你的年龄是？

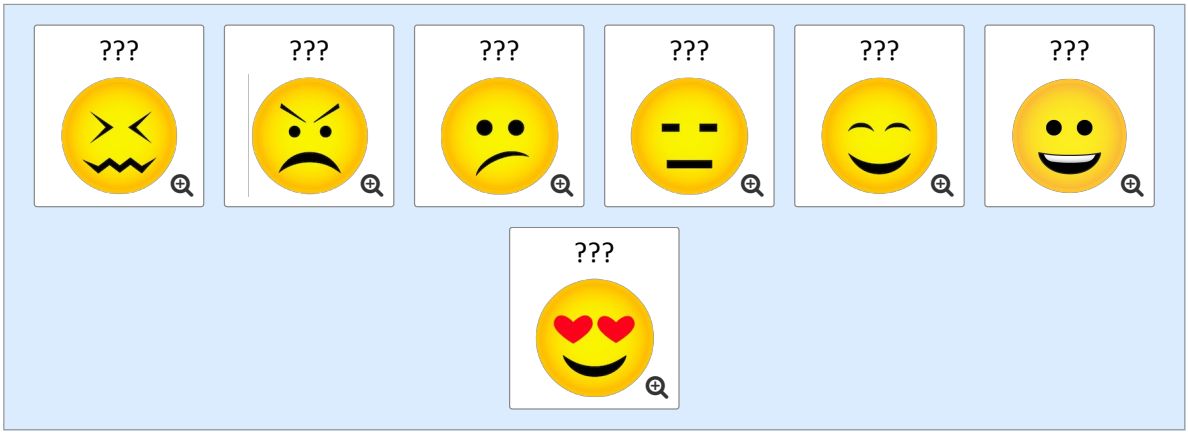
- 8 years old 8岁
- 9 years old 9岁
- 10 years old 10岁
- 11 years old 11岁
- None of the above 以上都不是

If you are viewing this screen, you did not qualify for this particular study.
如果您看到这个页面，表示您不符合测试的要求
We look forward to your participation in future studies.
希望您可以参加未来其他测试
Thank you for completing this survey!
感谢完成本次测试！

Look at the emojis below to answer the following question.
请看下面的表情包并回答问题
Please sort the emojis in order from the best feeling, most positive emoji to the worst feeling, most negative emoji.
Drag and drop the emojis into the numbered boxes.
请将表情包按照您觉得代表最好的感觉/最积极的感觉到最差/最消极的感觉分类。
请将表情拖到对应的数字框中
(1st=Best Feeling, 7th=Worst Feeling)
（第**1**个**=**最好的感觉，第**7**个**=**最差的感觉）

1st	2nd	3rd	4th

5th	6th	7th



看牙医时你的感觉是？（单选）

How would you describe going to the dentist? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

打扫房间时你的感觉是？（单选）

How would you describe cleaning your room? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

煮饭煮菜你的感觉是？（单选）

How would you describe cooking? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

读一本书时你的感觉是？（单选）

How would you describe reading a book? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

去公园玩你的感觉是？（单选）

How would you describe going to the park? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

参观博物馆时你的感觉是？（单选）

How would you describe going to a museum? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

肚子疼你的感觉是？（单选）

How would you describe getting a stomach ache? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

轮滑你的感觉是？（单选）

How would you describe roller skating? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

郊游时你的感觉是？（单选）

How would you describe going on a field trip? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容烧烤味薯片？（单选）

How would you describe BBQ potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容辣味薯片？（单选）

How would you describe spicy potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容番茄味薯片？（单选）

How would you describe tomato potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容黄瓜味薯片？（单选）
How would you describe cucumber potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容奶酪味薯片？（单选）
How would you describe cheese potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容铁板鱿鱼味薯片？（单选）
How would you describe sizzling squid potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

你怎样形容海苔味薯片？（单选）
How would you describe seaweed potato chips? (Choose one)

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good超级好

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

看牙医你的感觉是？（选择一种表情）

How does going to the dentist make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

打扫房间时你的感觉是？（选择一种表情）

How does cleaning your room make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

煮饭煮菜你的感觉是？（选择一种表情）

How does cooking make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

读一本书时你的感觉是？（选择一种表情）

How does reading a book make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

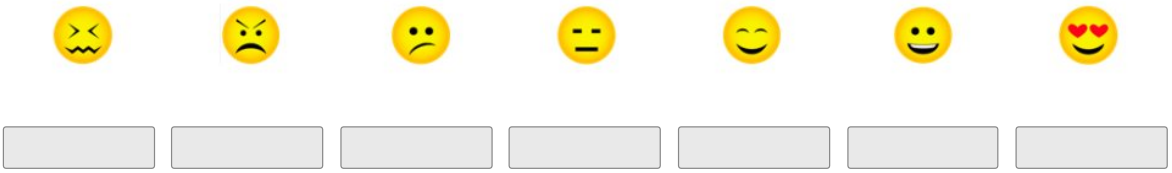
去公园玩你的感觉是？（选择一种表情）

How does going to the park make you feel? (Choose one face)

Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

参观博物馆时你的感觉是？（选择一种表情）

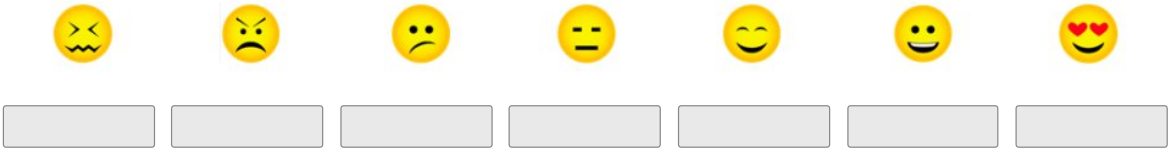
How does going to a museum make you feel? (Choose one face)



Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

肚子疼你的感觉是？（选择一种表情）

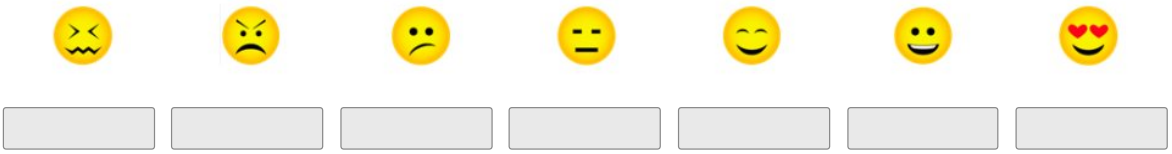
How does getting a stomach ache make you feel? (Choose one face)



Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

轮滑你的感觉是？（选择一种表情）

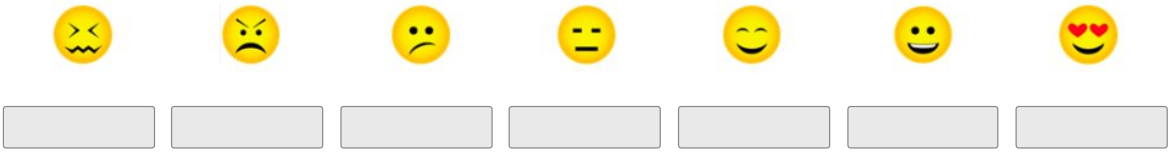
How does roller skating make you feel? (Choose one face)



Look at the faces and click on the face that matches how the activity makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情

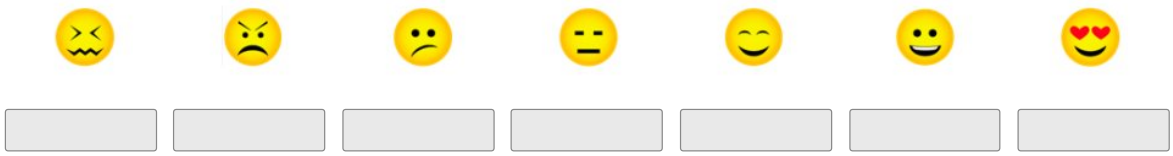
学校郊游时你的感觉是？（选择一种表情）

How does going on a fieldtrip at school make you feel? (Choose one face)



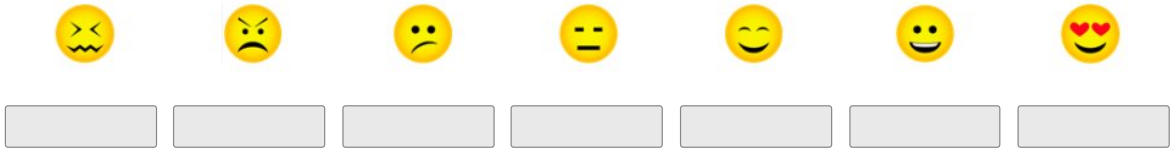
Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
烧烤味薯片给你带来的感觉是？（选择一种表情）

How does BBQ patato chips make you feel? (Choose one face)



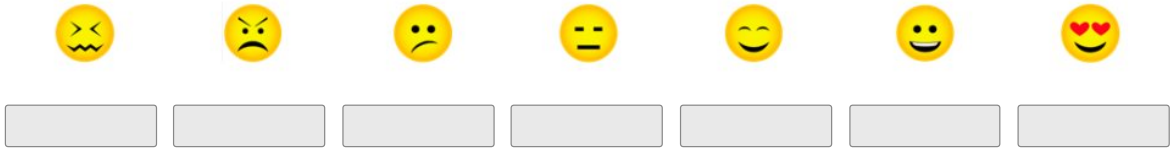
Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
辣味薯片给你带来的感觉是？（选择一种表情）

How does spicy potato chips make you feel? (Choose one face)



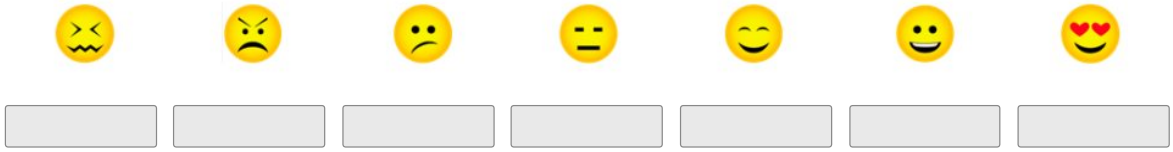
Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
番茄味薯片给你带来的感觉是？（选择一种表情）

How does tomato potato chips make you feel? (Choose one face)



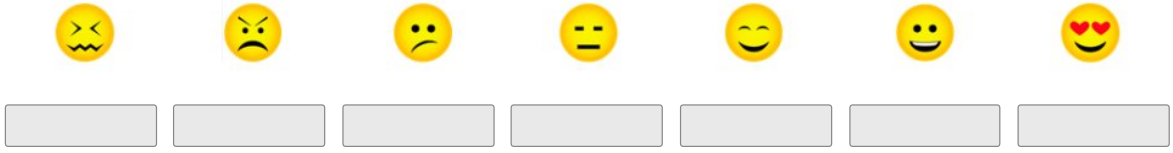
Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
黄瓜味薯片给你带来的感觉是？（选择一种表情）

How does cucumber potato chips make you feel? (Choose one face)



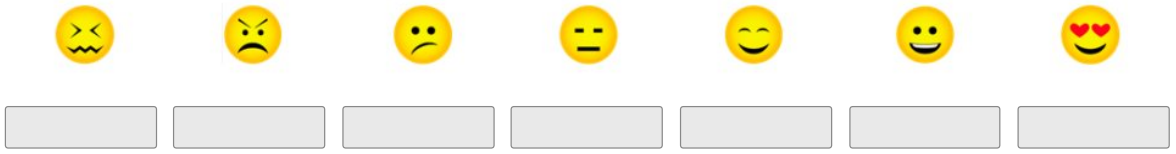
Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
奶酪味薯片给你带来的感觉是？（选择一种表情）

How does cheese potato chips make you feel? (Choose one face)



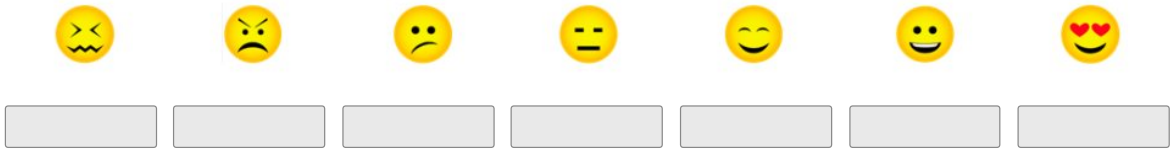
Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
铁板鱿鱼味薯片给你带来的感觉是？（选择一种表情）

How does sizzling squid potato chips make you feel? (Choose one face)



Look at the faces and click on the face that matches how the flavor of pizza makes you feel.
请看下面脸的表情，点击与你感觉相一致的表情
海苔味薯片给你带来的感觉是？（选择一种表情）

How does seaweed potato chips make you feel? (Choose one face)



感谢参与并完成本次测试！

Thank you for completing this survey!

感谢参与并完成本次测试！

Thank you for completing this survey!

Phase 2 - USA, Child Screener

Welcome Panelist name!

Click the *next* button to begin

Please answer questions about yourself, the parent, until otherwise instructed.

What is your gender?

- ○ Female
- ○ Male

Do you or does any member of your immediate family work for any of the following types of companies?
(select all that apply)

- ☐ Advertising or public relations ???
- ☐ Market research ???
- ☐ Broadcast or print media ???
- ☐ Food or beverage manufacturer ???
- ☐ Grocery store or supermarket ???
- ☐ Credit card company ???
- ☐ Animal shelter or pet shop ???
- ☐ Auto manufacturing/sales ???
- ☐ School or University ???
- ☐ None of the above

Do you currently have any children residing in your household?

- Yes
- No

Are you, yourself, the parent or legal guardian of the children in your household?

- Yes
- No

What are the ages of the children living your household? (select all that apply)

- younger than 4 years old
- 4-7 years old
- 8-11 years old
- 12-15 years old
- 16 years or older

Please read the following carefully.

For this study, we are only able to select one child from a single household.

Knowing that only one child per household would be able to participate, are you willing to continue the screening process for just one of your children?

- Yes, I will complete the screener for just one child
- No, I would like to end the screening process

Please complete the following questions for just one child between the ages of 8-11 years.

What is the NAME of the 8-11 year old child?

What is ${WILDCARD1}'s gender?

- Girl
- Boy

What age will ${WILDCARD1} be on April 17th, 2018?

- 8 years old
- 9 years old
- 10 years old
- 11 years old
- None of the above

When was the last time that ${WILDCARD1} participated in any studies here at the K-State Olathe campus or any other location?

- In the past month
- In the past 2 months
- In the past 3 months
- In the past 4-6 months
- More than 6 months ago
- He/she has never participated in a taste test or focus group

Does ${WILDCARD1} have any food allergies or dietary restrictions (i.e. vegan, kosher)?

- Yes
- No
- I don't know

Which of the following has ${WILDCARD1} <u>consumed</u> in the past 2 weeks? (select all the apply)

- [ ] Flavored milkshake or smoothie ???
- [ ] Chicken nuggets, strips or tenders ???
- [ ] Hot dog or corn dog ???
- [ ] Hamburger or cheeseburger ???
- [ ] Mashed potatoes or french fries ???
- [ ] Popsicle, water ice or ice pop ???
- [ ] Potato chips or pretzels ???
- [ ] Chicken noodle soup ???
- [ ] Ice Cream ???
- [ ] None of the above

Please indicate if ${WILDCARD1} is unwilling or willing to try each of the following flavors of potato chips?

	Unwilling to try	Willing to try
Plain/Classic		
Barbeque		
Sour Cream & Onion		
Cheddar & Sour Cream		
Dill Pickle		
Salt & Vinegar		
Chile Limon		

Based on your responses, ${WILDCARD1} is a potential candidate for a Kids Potato Chip study.

- **The taste test will be conducted at the Sensory & Consumer Research Center on April 17th.**
- **The study will take no more than 30 minutes for your child to complete.**
- **Your child will be compensated $30 for participation in this study.**
- **You, the parent or legal guardian taking this screener MUST be the person bringing your child**
- **You, the parent or legal guardian taking this screener MUST stay on the premises for the duration of the**

study.

Based on the above details, are you willing to allow ${WILDCARD1} to participate in this study?
(Note - ${WILDCARD1} could be disqualified during check in if he/she is not accompanied by the parent or legal guardian who took this screener.)

- ○ Yes
- ○ No

Please read the following requirements:

- **${WILDCARD1} may not eat or drink anything other than water for 30 minutes prior to the session time.**
- **Please arrive 10 minutes early to allow time for check in.**
- **You must bring your drivers' license or other government issued photo identification card for check in.**
- **You, the parent or legal guardian taking this screener MUST be the person bringing your child to the taste test.**
- **You, the parent or legal guardian taking this screener MUST stay on the premises for the duration of the study.**

Do you agree to adhere to the requirements above?

(Note - ${WILDCARD1} could be disqualified during check in if you have not met the requirements.)

- ○ Yes
- ○ No

Thanks for completing this test.

If you are viewing this screen, your child did not qualify for this particular study. We look forward to your participation in future studies.

Phase 2 - USA, Child Questionnaire

Welcome!

Click the *next* button to begin

Hello!

Please read the statements below.

1. I agree to participate in this potato chip taste test.

2. I know I will be compensated for my complete participation.

3. No one will use my name as part of this test.

4. I know that I do not have to finish this survey if I do not want to finish.

I am typing my name because I have read and agree to the 4 statements above.

Are you a boy or a girl?

- ○ Boy
- ○ Girl

How old are you?

- ○ 8 years old
- ○ 9 years old
- ○ 10 years old
- ○ 11 years old
- ○ None of the above

How much do you want to try these flavors of potato chips?

	Definitely do NOT want to try	Probably do NOT want to try	May or may not want to try	Probably want to try	Definitely want to try
Plain/Classic Potato Chips					
Sweet Southern Heat Barbeque Potato Chips					
Sour Cream & Onion Potato Chips					
Cheddar & Sour Cream Potato Chips					
Dill Pickle Potato Chips					
Salt & Vinegar Potato Chips					
Chile Limon Potato Chips					

Please have some cracker first and then have some water to clean your mouth while you wait for your FIRST sample.

When you have received sample BC111, click *next* to continue.

0:30

Please taste sample BC111 and answer the following question.

Overall, how good or bad are these Sample Name 1?

Super bad	Really bad	Bad	Just a little bad	Maybe good or maybe bad	Just a little good	Good	Really good	Super good

Please re-taste sample BC111 and answer the following question.

Look at the faces and click on the face that matches how the sample makes you feel.

Overall, how do these Sample Name 1 make you feel?

Do you have your own smart phone?

- Yes
- No

Do you have your own tablet?

- Yes
- No

Do you use emojis?

- Yes
- No

How often do you use emojis?

- Very often (at least daily)
- Frequently (3-5 days a week)
- Occasionally (at least once a week)
- Rarely (less than once a week)
- I never use emojis

Sensory and Consumer Research Center

Thank you for completing this test!

Please find your parent and sign out at the front table.

Finished

Phase 2 - China, Child Questionnaire

欢迎

请点击“**next**”按键开始测试

Welcome!

Click the *next* button to begin

Hello ${WILDCARD1}!你好！

Please read the statements below.请阅读下面的句子。

1. I agree to participate in this survey.我同意参加本次在线调研

2. I know I will be compensated for my complete participation.我了解完成本次测试后会得到报酬。

3. No one will use my name as part of this test.没有人会将我的名字作为测试的一部分。

4. I know that I do not have to finish this survey if I do not want to finish.我了解我不是必须完成本次测试。

I am typing my name because I have read and agree to the 4 statements above. 我阅读了并且同意以上**4**点后录入我的名字

What is your gender?你的性别？

- ○ Female 女
- ○ Male 男

How old are you? 你的年龄是？

- ○ 8 years old 8岁
- ○ 9 years old 9岁
- ○ 10 years old 10岁
- ○ 11 years old 11岁
- ○ None of the above 都不是

On a scale of 1 to 5, how much would you like to taste these flavors of potato chips?
1-5 分，你愿意尝以下薯片的味道吗?

	Totally unwilling to taste 非常不愿意	Somewhat not willing to taste 有点不愿意	May or may not be willing to taste 没有愿意也没有不愿意	Somewhat willing to taste 有点愿意	Totally willing to taste 非常愿意
Spicy Potato Chip 辣味薯片	1	2	3	4	5
Tomato Potato Chip 番茄味薯片	1	2	3	4	5
Cheese Potato Chip 奶酪味薯片	1	2	3	4	5
BBQ Potato Chip 烧烤味薯片	1	2	3	4	5
Sizzling Squid Potato Chip 铁板鱿鱼味薯片	1	2	3	4	5
Seaweed Potato Chip 海苔味薯片	1	2	3	4	5
Cucumber Potato Chip 黄瓜味薯片	1	2	3	4	5

Please have some cracker first and then have some water to clean your mouth while you wait for your FIRST sample.
您等待第一个样品时，请先吃饼干，在喝些水，以清理口腔的味道。谢谢

When you have received sample BC111, click *next* to continue.
您收到样品**BC111**后，请点击“下一页”继续

0:45

Please taste sample BC111 and answer the following question.
请品尝样品BC111，并回答以下问题

Overall, how much do you like or dislike these **Product Name 1**?
整体来说，你喜欢或不喜欢样品**Sample Name 1**的程度是？

Super bad超级差	Really bad真的差	Bad差	Just a little bad只是一点点差	Maybe good or maybe bad不好也不差	Just a little good只是一点点好	Good好	Really good真的好	Super good 超级好

Please re-taste sample BC111 and answer the following question.
请再次品尝样品BC111 并回答以下问题

Look at the faces and click on the face that matches how the sample makes you feel.
请看下列表情，并点击与样品给你带来感觉相符的表情

***Overall,** how do these **Product Name 1** make you feel?*
整体，样品 **Sample Name 1** 给你带来的感觉是？

Do you own a smart phone?
你有智能手机吗？

- ○ Yes 有
- ○ No 没有

Do you own a tablet?
你有平版电脑吗？

- ○ Yes 有
- ○ No 没有

Do you use emojis?
你使用表情包吗？

- ○ Yes 使用
- ○ No 不使用

How often do you use emojis?
你使用表情包的频率是？

- ○ Very often (at least daily)非常常用（至少每天）
- ○ Frequently (3-5 days a week)常用（3-5天每周）
- ○ Occasionally (at least once a week)偶尔用（每周至少一次）
- ○ Rarely (less than once a week)不常用（每周少于一次）
- ○ I never use emojis 我从来不用表情包

感谢您参加并完成本次测试！

Thank you for completing this survey!

Finished

Experiment 1 - USA, Adult Screener

Welcome Panelist name!

Click the *next* button to begin

Are you male or female?

- Male
- Female

Which of the following categories best describes your age?

- Under 18
- 18-24
- 25-30
- 31-35
- 36-40
- 41-45
- 46-50
- 51-55
- 56-60
- 61 and above

Do you, or does any member of your immediate family, work for any of the following types of companies? (check all that apply)

- [ ] Advertising or Public Relations ???
- [ ] Market Research ???
- [ ] Broadcast or Print Media ???
- [ ] Food or Beverage Manufacturer ???
- [ ] A Grocery Store or Supermarket ???
- [ ] Auto Manufacturing/Sales ???
- [ ] Credit Card Company ???
- [ ] None of the Above

Which number range best describes your total annual household income before taxes?

- ○ Under $20,000
- ○ $20,000 to $34,999
- ○ $35,000 to $49,999
- ○ $50,000 to $59,999
- ○ $60,000 to $74,999
- ○ $75,000 to $99,999
- ○ $100,000-$149,999
- ○ $150,000 or more

Which of the following describes your current employment status?

- ○ Working full-time
- ○ Working part-time
- ○ Homemaker
- ○ Retired
- ○ Not currently working (not a homemaker or retired)

Have <u>you</u> participated in a market research study in the past 3 months?

- ○ Yes
- ○ No

Which of the following allergens are you aware of having? (check all that apply)

- ☐ Wheat ???
- ☐ Soybeans ???
- ☐ Eggs ???
- ☐ Milk ???
- ☐ Fish ???
- ☐ Crustacean shellfish ???
- ☐ Tree Nuts ???
- ☐ Peanuts ???
- ☐ Other (specify) _____
- ☐ I don't know
- ☐ I am not allergic to any of the above

Are you on a special diet for health or religious reasons? (i.e. diabetic, kosher, vegetarian)

- ○ Yes
- ○ No

Which of the following types of products have you purchased and consumed in the PAST 30 DAYS? (check all that apply)

- ☐ Fruits/Vegetables ???
- ☐ Crackers/Cracker Snacks ???
- ☐ Ready to Drink Juice ???
- ☐ Chips/Pretzels ???
- ☐ Cookies ???
- ☐ Popcorn ???
- ☐ Cheese Sticks ???
- ☐ Nuts/Trail Mix ???
- ☐ Granola/Cereal Bars ???
- ☐ None of the above

What kind(s) of CHIPS/PRETZELS have you purchased and consumed in the PAST 30 DAYS? (check all that apply)

- ☐ Pretzel crisps/thins ???
- ☐ Flavored pretzels ???
- ☐ Coated pretzels (i.e. chocolate or yogurt covered) ???
- ☐ Plain pretzels (any shape) ???
- ☐ Plain potato chips ???
- ☐ Flavored potato chips ???
- ☐ Tortilla chips ???
- ☐ Veggie chips ???
- ☐ Other (specify)
- ☐ None of the above

How often do you consume potato chips (plain or flavored)?

- ○ At least once per week
- ○ Once every 2 weeks
- ○ Once a month
- ○ Once every 2-3 months
- ○ Once every 4-6 months
- ○ Once every 7-12 months
- ○ I do not consume potato chips

Please indicate which flavors of potato chips your are unwilling or willing to try.

	Unwilling to try	Willing to try
Plain/Classic		
Barbeque		
Sour Cream & Onion		
Cheddar & Sour Cream		
Dill Pickle		
Salt & Vinegar		
Chile Limon		

You are being considered for a **Potato Chip** study Tuesday, April 17th. The study will take approximately 30 minutes to complete and you will be compensated $30 for your time.

If you qualify based on your answers to this survey, you will see a list of times available for the study. You will be able to select the time that best fits your schedule.

If you do not qualify, you will see the disqualified screen.

If you are willing to participate, please enter your daytime phone number in the box below (with area code).

My daytime phone number:

I'm not willing to participate in this study.

Please read the following requirements for participation in this study:

- You many not eat or drink anything other than water for 30 minutes prior to your session time.
- Do not wear fragrance, cologne, or any sort of strong scents on the day of the study.
- Arrive 10 minutes early to check in.
- You must bring your driver's license or other government issued photo identification card for check in.

Do you agree to adhere to the requirements above?
(Note - you could be disqualified during check in if you have not met these requirements.)

Yes

No

Sensory and Consumer Research Center

Thanks for completing this test.

If you are viewing this screen, you did not qualify for this particular study.

We look forward to your participation in future studies.

Finished

Experiment 1 - USA, Adult Questionnaire

Welcome Panelist name!

Click the *next* button to begin

1. I agree to participate as a panelist in research conducted by Kansas State University.
2. I understand that the purpose of this project is to participate in a potato chip tasting.
3. I will receive participation payment when I complete this study.
4. I understand my performance as an individual will be treated as research data and will in no way be associated with me for anything other than identification purposes, thereby assuring confidentiality of performance and responses.
5. I understand that I do not have to participate in this research and may choose not to participate without penalty.
6. I understand that I may withdraw at any time.

By typing my name in the space below, I am providing my electronic signature and acknowledging that I understand the above statements.

What is your gender?

- ○ Female
- ○ Male

Which of the following includes your current age?

- ○ Less than 18 years old
- ○ 18-24
- ○ 25-34
- ○ 35-45
- ○ Over 45 years old

Which of the following best describes your current state of employment? (Choose one)

- ○ Business person ???
- ○ Industrial/agriculture worker ???
- ○ Teacher ???
- ○ Government employee ???
- ○ Student ???
- ○ Self-employed ???
- ○ Retired ???
- ○ Other (please specify) _____

Which of the following includes your current total household income before taxes?

- ○ Under $20,000
- ○ $20,000-$34,999
- ○ $35,000-$49,999
- ○ $50,000-$64,999
- ○ $65,000-$79,999
- ○ $80,000-$94,999
- ○ $95,000 or more

How likely would you be to purchase the following flavors of potato chips for yourself?

	Definitely would not purchase	Probably would not purchase	Might or might not purchase	Probably would purchase	Definitely would purchase
Plain/Classic Potato Chips					
Sweet Southern Heat Barbeque Potato Chips					
Sour Cream & Onion Potato Chips					
Cheddar & Sour Cream Potato Chips					
Dill Pickle Potato Chips					
Salt & Vinegar Potato Chips					
Chile Limon Potato Chips					

Please have some cracker first and then have some water to clean your mouth while you wait for your FIRST sample.

When you have received sample BC111, click *next* to continue.

0:30

Please taste sample BC111 and answer the following question.

Overall, how much do you like or dislike these Sample Name 1?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

Please re-taste sample BC111 and answer the following question.

Look at the faces and click on the face that matches how the sample makes you feel.

Overall, how do these Sample Name 1 make you feel?

Do you own a smart phone?

- Yes
- No

For what purpose do you MOST OFTEN use your smart phone? (Choose one)

- Work (email, business calls, etc.) ???
- Communicating with friends/family by text message ???
- Communicating with friends and family via voice or video calling (calling, Facetime, etc.) ???
- Social media ???
- Other (please specify)

Do you use emojis?

- Yes
- No

How often do you use emojis?

- ○ Very often (at least daily)
- ○ Frequently (3-5 days a week)
- ○ Occasionally (at least once a week)
- ○ Rarely (less than once a week)
- ○ I never use emojis

How appropriate is this scale <u>for the questions in the test you just completed</u>?

Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like nor dislike	Like slightly	Like moderately	Like very much	Like extremely

- ○ Very inappropriate
- ○ Inappropriate
- ○ Maybe or maybe not appropriate
- ○ Appropriate
- ○ Very appropriate

How appropriate is this scale <u>for the questions in the test you just completed</u>? (Choose one)

- ○ Very inappropriate
- ○ Inappropriate
- ○ Maybe or maybe not appropriate
- ○ Appropriate
- ○ Very appropriate

Thank you for completing this test!

Please sign out.

Return to the check-out table to receive your payment.

Finished

Experiment 1 - China, Adult Questionnaire

欢迎

请点击**“next”**按键开始测试

Welcome!

Click the *next* button to begin

1. I agree to participate as a panelist in research conducted by Vantage Market Research.我自愿参加本次由卓越调研开展的调研
2. I understand that the purpose of this project is to participate in a potato chip tasting.我了解本次测试的目的是参加一个薯片的品尝测试
3. I will receive participation payment when I complete this study.完成本次调研后我将得到报酬
4. I understand my performance as an individual will be treated as research data and will in no way be associated with me for anything other than identification purposes, thereby assuring confidentiality of performance and responses.
我了解我的个人评价将会作为研究数据，其他任何目的都不会与我相联系，从而保证数据的保密性。
5. I understand that I do not have to participate in this research and may choose not to participate without penalty.我了解我不是必须参加本次调研，选择不参加不会受到惩罚
6. I understand that I may withdraw at any time. 我了解任何时候我都可以退出

By typing my name in the space below, I am providing my electronic signature and acknowledging that I understand the above statements.
在以下空白处输入我的名字，提供我的电子签名并且确认我明白以上内容

What is your gender?你的性别？

- Female 女
- Male 男

Which of the following includes your current age?
您属于以下哪个年龄段？

- Less than 18 years old 18岁以下
- 18-24
- 25-34
- 35-45
- Over 45 years old 45以上

Which of the following best describes your employment? (Choose one)
下列哪个选项最好的描述了您的职业？（单选）

- Business person 商人 ???
- Industrial/agriculture worker工业/农业工作者 ???
- Teacher教师 ???
- Government employee政府工作人员 ???
- Student 学生 ???
- Self-employed 自营职业者 ???
- Retired 退休 ???
- Other (please specify)其他（请具体说明）

Which of the following includes your current total actual household income （Full income: Including wages, bonuses, subsidies, etc.）per month?
您目前家庭每月的实际总收入（到手的全部收入：包括工资，奖金，补贴等）属于以下哪个选项？

- Below 5,000 yuan 5000元以下
- 5,000-5,999 yuan 元
- 6000-6,999 yuan 元
- 7000-7,999 yuan 元
- 8,000-8,999 yuan 元
- 9,000-9,999 yuan 元
- 10,000-14,999 yuan元
- 15,000-19999 yuan元
- 20,000-24,999 yuan元
- 25,000-29,999yuan元
- Above 30,000yuan 3万元以上
- Prefer not to answer不愿回答

How likely would you be to purchase the following flavors of potato chips for yourself?
你有多大可能为自己购买以下风味的薯片？

	Definitely would not purchase 一定不会买	Probably would not purchase 可能不会买	Might or might not purchase 可能会买，也可能不会买	Probably would purchase 可能会买	Definitely would purchase 一定会买
Spicy Potato Chip 辣味薯片					
Tomato Potato Chip 番茄味薯片					
Cheese Potato Chip 奶酪味薯片					
BBQ Potato Chip 烧烤味薯片					
Sizzling Squid Potato Chip 铁板鱿鱼味薯片					
Seaweed Potato Chip 海苔味薯片					
Cucumber Potato Chip 黄瓜味薯片					

Please have some cracker first and then have some water to clean your mouth while you wait for your FIRST sample.

您等待第一个样品时，请先吃饼干，在喝些水，以清理口腔的味道。谢谢

When you have received sample BC111, click *next* to continue.

当您收到样品**BC111**后，点击“下一页”继续

0:45

Please taste sample BC111 and answer the following question.

请品尝样品BC111并回答以下问题

Overall, how much do you like or dislike these **Product Name 1**?

整体来说，你喜爱或不喜爱 **Sample Name 1**的程度是？

Dislike extremely 极其不喜欢	Dislike very much 非常不喜欢	Dislike moderately 中等不喜欢	Dislike slightly 略不喜欢	Neither like nor dislike 没有喜欢也没有不喜欢	Like slightly 略喜欢	Like moderately 中等喜欢	Like very much 非常喜欢	Like extremely 极其喜欢

Please re-taste sample BC111 and answer the following question.
请再次品尝样品BC111 并回答以下问题

Look at the faces and click on the face that matches how the sample makes you feel.
请看下列表情，并点击与样品给你带来感觉相符的表情

Overall, how do these **Product Name 1** make you feel?
整体，样品 **Sample Name 1**给你带来的感觉是？

Do you own a smart phone?
你有智能手机吗？

- Yes 有
- No 没有

For what purpose do you MOST OFTEN use your smart phone? (Choose one)
你最常用你的智能手机做什么？（单选）

- Work (email, business calls, etc.)工作（邮件，商业电话，等） ???
- Communicating with friends/family by text message以文字信息方式与家人或朋友联系 ???
- Communicating with friends and family via voice or video calling (calling, Facetime, etc.)通过语音或视频与家人或朋友联系 ???
- Social media 社交媒体 ???
- Other (please specify)其他（请具体指出）

Do you use emojis?
你使用表情包吗？

- Yes 使用
- No 不使用

How often do you use emojis?
你使用表情包的频率是？

- Very often (at least daily)非常常用（至少每天）
- Frequently (3-5 days a week)常用（3-5天每周）
- Occasionally (at least once a week)偶尔用（每周至少一次）
- Rarely (less than once a week)不常用（每周少于一次）
- I never use emojis 我从来不用表情包

感谢您参加并完成本次测试！

Thank you for completing this survey!

Finished

Experiment 2 - USA, Adult Screener

Welcome Panelist name!

Click the *next* button to begin

Are you male or female?

- Male
- Female

Which of the following categories best describes your age?

- Under 18
- 18-24
- 25-30
- 31-35
- 36-40
- 41-45
- 46-50
- 51-55
- 56-60
- 61 and above

Do you, or does any member of your immediate family, work for any of the following types of companies? (check all that apply)

- [ ] Advertising or Public Relations ???
- [ ] Market Research ???
- [ ] Broadcast or Print Media ???
- [ ] Food or Beverage Manufacturer ???
- [ ] A Grocery Store or Supermarket ???
- [ ] Auto Manufacturing/Sales ???
- [ ] Credit Card Company ???
- [ ] None of the Above

Which number range best describes your total annual household income before taxes?

- ○ Under $20,000
- ○ $20,000 to $34,999
- ○ $35,000 to $49,999
- ○ $50,000 to $59,999
- ○ $60,000 to $74,999
- ○ $75,000 to $99,999
- ○ $100,000-$149,999
- ○ $150,000 or more

Which of the following describes your current employment status?

- ○ Working full-time
- ○ Working part-time
- ○ Homemaker
- ○ Retired
- ○ Not currently working (not a homemaker or retired)

Have <u>you</u> participated in a market research study in the past 3 months?

- ○ Yes
- ○ No

Which of the following allergens are you aware of having? (check all that apply)

- ☐ Wheat ???
- ☐ Soybeans ???
- ☐ Eggs ???
- ☐ Milk ???
- ☐ Fish ???
- ☐ Crustacean shellfish ???
- ☐ Tree Nuts ???
- ☐ Peanuts ???
- ☐ Other (specify) _____
- ☐ I don't know
- ☐ I am not allergic to any of the above

Are you on a special diet for health or religious reasons? (i.e. diabetic, kosher, vegetarian)

- ○ Yes
- ○ No

Which of the following types of products have you purchased and consumed in the PAST 30 DAYS? (check all that apply)

- ☐ Fruits/Vegetables ???
- ☐ Crackers/Cracker Snacks ???
- ☐ Ready to Drink Juice ???
- ☐ Chips/Pretzels ???
- ☐ Cookies ???
- ☐ Popcorn ???
- ☐ Cheese Sticks ???
- ☐ Nuts/Trail Mix ???
- ☐ Granola/Cereal Bars ???
- ☐ None of the above

What kind(s) of CHIPS/PRETZELS have you purchased and consumed in the PAST 30 DAYS? (check all that apply)

- ☐ Pretzel crisps/thins ???
- ☐ Flavored pretzels ???
- ☐ Coated pretzels (i.e. chocolate or yogurt covered) ???
- ☐ Plain pretzels (any shape) ???
- ☐ Plain potato chips ???
- ☐ Flavored potato chips ???
- ☐ Tortilla chips ???
- ☐ Veggie chips ???
- ☐ Other (specify)
- ☐ None of the above

How often do you consume potato chips (plain or flavored)?

- ○ At least once per week
- ○ Once every 2 weeks
- ○ Once a month
- ○ Once every 2-3 months
- ○ Once every 4-6 months
- ○ Once every 7-12 months
- ○ I do not consume potato chips

Please indicate which flavors of potato chips your are unwilling or willing to try.

	Unwilling to try	Willing to try
Plain/Classic		
Spicy Barbeque		
Sour Cream & Onion		
Cheddar & Sour Cream		
Dill Pickle		
Salt & Vinegar		
Chile Limon		

You are being considered for a **Potato Chip** study Thursday, September 6th. The study will take approximately 30 minutes to complete and you will be compensated $30 for your time.

If you qualify based on your answers to this survey, you will see a list of times available for the study. You will be able to select the time that best fits your schedule.

If you do not qualify, you will see the disqualified screen.

If you are willing to participate, please enter your daytime phone number in the box below (with area code).

My daytime phone number:

I'm not willing to participate in this study.

Please read the following requirements for participation in this study:

- You many not eat or drink anything other than water for 30 minutes prior to your session time.
- Do not wear fragrance, cologne, or any sort of strong scents on the day of the study.
- Arrive 10 minutes early to check in.
- You must bring your driver's license or a government issued photo identification card for check in.
- Children will not be allowed at this study, please make prior childcare arrangements.
- K-State Olathe is a smoke-free campus, you must refrain from smoking while on the property.

Do you agree to adhere to the requirements above?
(Note - you could be disqualified during check in if you have not met these requirements.)

Yes

No

Sensory and Consumer Research Center

Thanks for completing this test.

If you are viewing this screen, you did not qualify for this particular study.

We look forward to your participation in future studies.

Finished

Experiment 2 - USA, Adult Questionnaire

Welcome Panelist name!

Click the *next* button to begin

1. I agree to participate as a panelist in research conducted by Kansas State University.
2. I understand that the purpose of this project is to participate in a potato chip tasting.
3. I will receive participation payment when I complete this study.
4. I understand my performance as an individual will be treated as research data and will in no way be associated with me for anything other than identification purposes, thereby assuring confidentiality of performance and responses.
5. I understand that I do not have to participate in this research and may choose not to participate without penalty.
6. I understand that I may withdraw at any time.

By typing my name in the space below, I am providing my electronic signature and acknowledging that I understand the above statements.

What is your gender?

- ○ Female
- ○ Male

Which of the following includes your current age?

- ○ Less than 18 years old
- ○ 18-24
- ○ 25-34
- ○ 35-45
- ○ Over 45 years old

How likely would you be to purchase the following flavors of potato chips for yourself?

	Definitely would not purchase	Probably would not purchase	Might or might not purchase	Probably would purchase	Definitely would purchase
Plain/Classic Potato Chips					
Sweet Southern Heat Barbeque Potato Chips					
Sour Cream & Onion Potato Chips					
Cheddar & Sour Cream Potato Chips					
Dill Pickle Potato Chips					
Salt & Vinegar Potato Chips					
Chile Limon Potato Chips					

Which of the following best describes your current state of employment? (Choose one)

- ○ Business person ???
- ○ Industrial/agriculture worker ???
- ○ Teacher ???
- ○ Government employee ???
- ○ Student ???
- ○ Self-employed ???
- ○ Retired ???
- ○ Other (please specify) _____

Which of the following includes your current total household income before taxes?

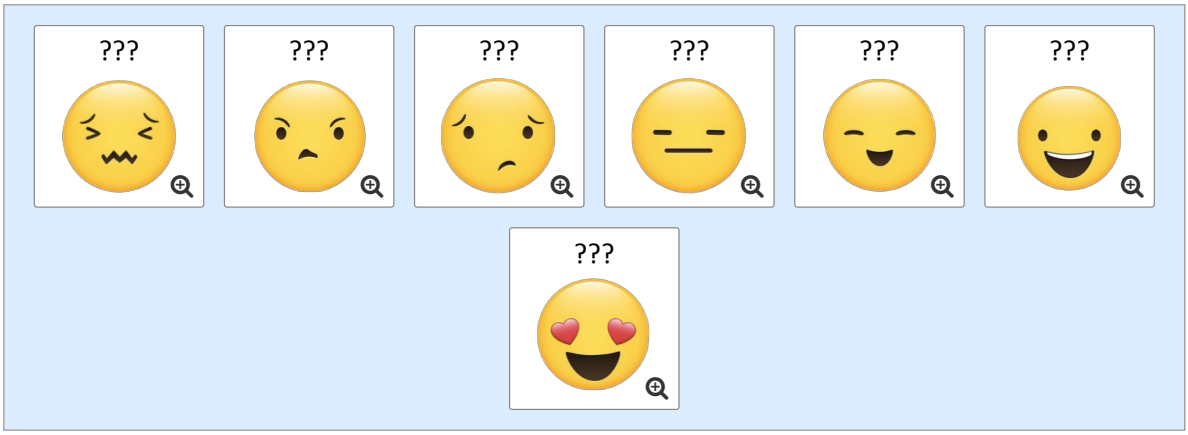
- Under $20,000
- $20,000-$34,999
- $35,000-$49,999
- $50,000-$64,999
- $65,000-$79,999
- $80,000-$94,999
- $95,000 or more

Look at the emojis below to answer the following question.

Please sort the following emojis from the most positive emotional response to the most negative emotional response.
(1st=Most Positive, 7th=Most Negative)

1st	2nd	3rd	4th

5th	6th	7th



Please have some cracker first and then have some water to clean your mouth while you wait for your FIRST sample.

When you have received sample BC111, click *next* to continue.

0:30

Please taste sample BC111 and answer the following question.

Look at the faces and click on the face that matches how the sample makes you feel.

Overall, how do these Sample Name 1 make you feel?

Do you own a smart phone?

- Yes
- No

For what purpose do you MOST OFTEN use your smart phone? (Choose one)

- ○ Work (email, business calls, etc.) ???
- ○ Communicating with friends/family by text message ???
- ○ Communicating with friends and family via voice or video calling (calling, Facetime, etc.) ???
- ○ Social media ???
- ○ Other (please specify) _____

Do you use emojis?

- ○ Yes
- ○ No

How often do you use emojis?

- ○ Very often (at least daily)
- ○ Frequently (3-5 days a week)
- ○ Occasionally (at least once a week)
- ○ Rarely (less than once a week)
- ○ I never use emojis

How appropriate is this scale <u>for the questions in the test you just completed</u>? (Choose one)

- Very inappropriate
- Inappropriate
- Maybe or maybe not appropriate
- Appropriate
- Very appropriate

Thank you for completing this test!

Please sign out.

Return to the check-out table to receive your payment.

Finished